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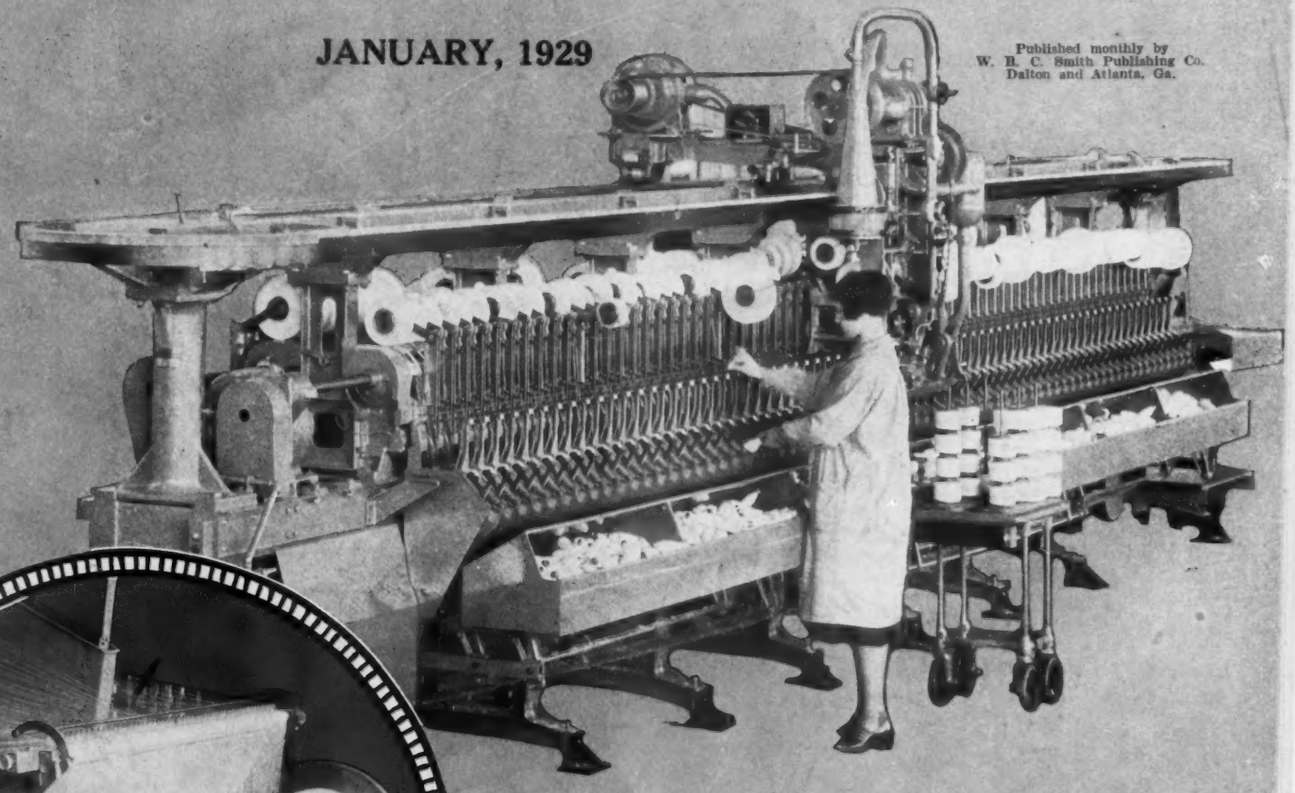

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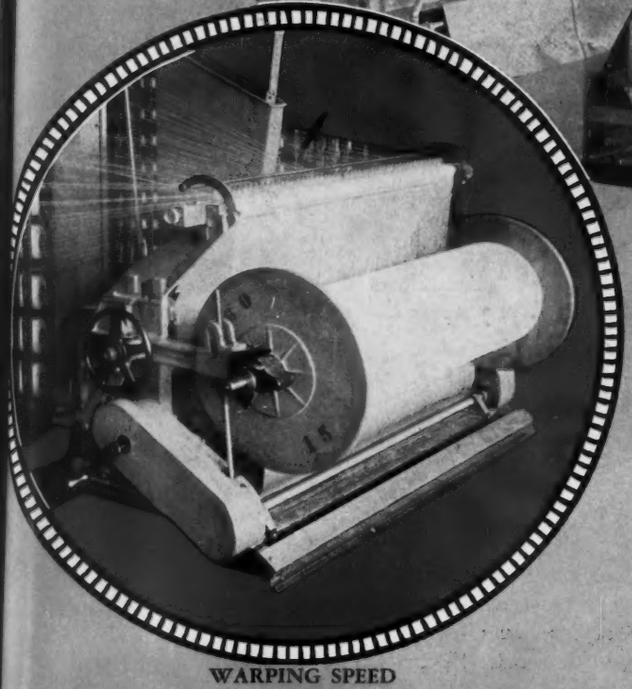

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January, 1929

W. R. C. SMITH, Publisher
T. W. McALLISTER, Editorial Director ROBERT W. PHILIP, Editor

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Turning the Pages—

"MILLS must either reduce their manufacturing costs or suspend operations. The former calls for the modernization of machinery processes and a readjustment of machinery operation. The latter means an enormous loss to the stockholders and unemployment for many.

"The far-sighted executives are modernizing their plants. They are discarding antiquated machinery and are buying the modern equipment throughout. They are finding it necessary to change their methods of operation. In the weave room the multiple loom system enables a mill to weave cloth at a lower cost and still maintain their wage scale. In other words, they are lowering their manufacturing costs, without having to make undesirable wage cuts. What is true in the weave room applies throughout the mill.

"In the readjustments necessary to place a cotton mill on a profitable basis, the employees and employers are called upon to adapt themselves to the new order of manufacturing. They are fighting the same battle —the battle against shut-downs, short time and unemployment. They are using stategy and will win by exercising their combined efforts in modernizing the industry."

The foregoing paragraphs from **The Textorian**, published by the Cone mill interests in Greensboro; emphasize the importance of "keeping in step."

In conversation recently, a successful southern mill superintendent, looking at his mill through the window, remarked, "I wonder if I could leave this place and come back in ten years and operate it, or even recognize it." Changes in method in the textile industry come so rapidly, especially so in recent years, that those of us who are constantly in touch with it do not always fully appreciate and recognize the remarkable improvements that are taking place under our very eyes. We rather accept them as a matter of course.

It is helpful at times, however, to take stock, to look in review occasionally over the ground we have tread, and it is strikingly impressive that the material compiled for this issue of COTTON, under the general theme of Textile Trends, provides the opportunity for such a review.

To follow the thought developed in these articles is to turn the pages of textile history during recent years—to catch the note of progressive forward movement that has pushed the industry ahead, slowly in many instances, perhaps, but none the less surely.

On the other hand, it is mainly by an analysis of conditions, and a diagnosis of ills, that corrective measures may be devised. So, in charting the trends, these writers have told not only of the helpful important forward strides, but at the same time point to parts of the structure which need especial attention and correction.

There are some phases of the industry which do not receive detailed treatment in this survey, and, in those covered, the authors perhaps may not not touch upon every point. These men were selected in each case because of their particular interest in and association with the subject; and they have given, comprehensively, their observations of the trend.

So that, with Mr. Harris discussing the situation in marketing, and with mill construction and design, carding, spinning and warp preparation, weaving, finishing, rayon and knitting discussed by men in close touch with these major phases, the composite picture presented is strikingly accurate and comprehensive.

It shows the changes that have occurred, as well as some of the features upon which thought must be applied by the industry's leaders to achieve comparable advancement in the future.

Change does not mean progress, but progress means change; therefore, change suggests progress.

The Industry Must Become *MARKET-MINDED*

By **George S. Harris**
President, Exposition Cotton Mills

The New Conditions Demand "Merchandising" Instead of Selling. There's a Difference. Manufacturers Must Become Market-Minded, and Worth Street and the Mills Must Work Together; Mergers Are Called Wholesome Aids to Industry.

IT IS interesting, if not disconcerting, to textile manufacturers to read of the prevailing prosperity in American industry and to find such statements as: "In discussions of American prosperity, it is necessary to make three exceptions, agriculture, coal and textiles." Such expressions have been quite common throughout market literature for the past several years, and whether warranted or not, they offer little consolation to the man harnessed into the game.

The condition of the textile executive and stockholder is not a happy one, but it could be much worse. The most hopeful feature, however, is the fact that they realize that things are not as they might be, and that they are willing to discuss ways and means of bringing about a correction. It is true that a very large percentage of our executives seem willing to drift along, but a much larger percentage concede that as an industry we are far from sound, and are considering the various suggestions that are being offered as a cure.

Starting in the 90s, we in the South grew steadily, and sometimes rapidly, up to and through the war years. Enjoying a seller's market generally throughout this period, it was quite natural that methods of operation became so firmly fixed that it is now very difficult to bring about the changes necessary to meet the new conditions. At the beginning of this period, the cotton-growing States could boast of not more than five million spindles, but, by the close of the war, the total had reached approximately eighteen million. More than that, management and labor had learned something in the meantime. Efficiency improved in every department, but most important of all was the improvement in efficiency in night operations. Prior to the war years, night operation was often attempted but was successful in only a few instances. Increased cost and poor quality made it unprofitable, and generally, in time it was abandoned. This has not been true for the past ten years. Mills that formerly were forced to abandon night operation now find it not only possible to produce high quality merchandise at night, but also profitable, with the same market price. The trouble is that our increased efficiency has been our undoing in that we have brought about a surplus capacity without learning how to handle it. There is no doubt that southern mills have progressed handsomely in reducing cost per unit, but this and more has been passed on to the trade, leaving the manufacturer less for his skill and effort than former conditions afforded. In fact, I doubt that the average manufacturer in southern mills today could get his manufacturing cost between cotton and net returns for his merchandise sold.

This has been the subject of many conferences during the past several years, and while progress has been made, we still seem to be a long way from the answer. Individuals are prone to blame any one rather than themselves, yet all seem to point in about the same general direction when looking for the cause. Through it all, the manufacturer tends to point to the merchant and to complain of low market prices, while the merchant, on the other hand, complains of too much production. What we do not find, however, is the merchants as a group forcefully urging a reduced production. Worth Street lacks the ability to work as a group when it comes to reducing volume, and looking at it through their eyes, we can not blame them. It is a manufacturing problem to produce only when Worth Street offers a price that warrants production. Until southern cotton manufacturers learn to sell only if, and when, the market offers a profitable operation, they may expect prices under cost.

There are two well known words in our vocabulary. One is *selling* and the other is *merchandising*. In defining these words, Webster says: To sell means to dispose of commodities or property. To merchandise means to trade,

Analysis of Marketing Methods.

IT is estimated that of the approximately 700,000 looms in this country, the methods of selling are about as follows:

Fine goods mills and Fall River mills selling direct	165,000 looms
Others selling direct	53,500 looms
Others controlling their selling agencies	40,000 looms
Those selling through independent selling agents	441,500 looms
	700,000 looms

These figures represent the estimate of the Cotton-Textile Institute, and are not an actual count. Since they were issued, Davison's Textile Directory lists 723,411 looms active; 15,355 idle; 3,150 under construction; a total of 741,916.

to carry on commerce. While recently discussing these definitions, I was told that in the terms we have a distinction without a difference. Yet the two definitions to me seem to have a very significant difference when applied to cotton goods. In other words, to dispose of cloth produced is one thing, but to "carry on" at prices our mills often accept for merchandise is an entirely different thing.

In searching for a better definition, we find in Fred W. Shibley's *"The New Way to Net Profits,"* this thought: "Merchandising, in terms of an economic formula, might be expressed as producing an article so processed as to possess the broadest market appeal at the lowest possible cost, and selling it at the lowest sales price consistent with a fair profit in the shortest possible time."

This strikes me as suggesting a creed to be adopted by southern cotton manufacturers. As our good friend, Cason Callaway, says, (Page 145, December, 1928, COTTON) we must learn to become more *"market* minded" and less *"production* minded." The thought here is that selling involves only "disposing of commodities" while merchandising is more far reaching and involves not only selling, but in the true sense of the term, controlling production. To permit conditions at the mill exclusively to control production policy must surely, in time, run aground any industry otherwise perfectly sound. A continuation of this practice in cotton textiles will in time find us calling on the government to pull our chestnuts out of the fire, as it is now attempting in the interest of agriculture.

In times past, the manufacturer produced what his plant was equipped to make most economically, and this was passed on to the merchant to be sold. The merchant today, from his position out front, must assume a greater responsibility, as it is his function to ascertain the demands of the trade as to kind and quantity and so to advise the manufacturer. It seems also to be the duty of our merchants to see that production is held within the limits which allow the markets to absorb it at a price that will afford the average manufacturer a fair return for his investment and effort. It is often suspected that in our industry, selling agencies are styling looms for the purpose of completing the lines the particular house desires to carry, rather than permitting the interest of the mill to control. It appears, too, that when a mill account is transferred from one house to another, the house losing the account will often endeavor to replace the yardage lost even though it means encouraging the construction of a new mill, without regard to market effects.

GEORGE S. HARRIS

"Needs no introduction." As a member of the Institute's directorate, past president of American Cotton Manufacturers Association, and president and manager of Exposition Cotton Mills, Atlanta, Ga., he is recognized as one of the industry's leaders in thought and action.

The total result of several causes has been a lack of parity between cotton and goods, which has brought about efforts to effect some correction. This was one of the principal reasons for the organization of the Cotton-Textile Institute. In the Institute we have all the necessary machinery, but the individual seems to think that now that we have it set up and operating, he can continue to follow his own dictates, regardless, and that "Mr. Hines will in some way fix it all up in time."

Why are we classed with coal and agriculture as one of the only three industries in America that are not prosperous? Other industries have the same problem of surplus production. In fact, every industry, by the very nature of things, must in time over-build. We are no different from the others, except that we have yet to learn the lesson of controlling our surplus, and probably of directing our merchandising. It isn't that we must adopt a policy of the strong carrying the weak, nor, on the other hand, is it necessary to adopt the survival of the fittest idea. There is a middle ground.

There is a certain percentage of marginal mills that are now going to the junk pile every year. That helps. We find both among manufacturers and merchants an increasing inclination to discuss our common problems. That will not help until these same manufacturers and merchants show more inclination to compromise differences and to work out their common problems. To do this, they must develop a more charitable attitude toward their competitors as well as a willingness to see their viewpoint.

Most important of all are the present efforts toward amalgamation and consolidation in both merchandising and production. It is true that we have "too many goods". It is also true that we have too many sellers and too many individual producers. With a "U. S. Steel Corporation" in textiles and with the Cotton-Textile Institute fully functioning, we could have a condition in which an efficient outfit could carry on in comfort instead of one in which the best equipped and managed organization too often runs at a loss. It is gratifying to see efforts to bring about sizable consolidation. The fact that the yarn mill merger seems to have run into difficulties should not deter others. The idea is sound and should be given every possible encouragement.

Editor's Note—In view of Mr. Harris' reference to mergers in the foregoing article, we direct the attention of the reader to a general article on this subject which appears upon another page of this issue of COTTON.

ENGINEERING TRENDS IN COTTON MILL CONSTRUCTION

Martha Mills, Thomaston, Ga., a typical example of modern construction

Throughout the Industry, the Curve Plotted by the Engineer Shows Much Progress -- Mill Design, in General and Detail, Discussed, and Auxiliary Features of the Mill and Village Are Described.

WHEN the trend of any matter is considered by an engineer, he instinctively pictures a curve with time as one of the co-ordinates. The direction of the curve expresses the tendency toward or away from a certain condition or situation. If the observer be limited to a point on his curve, say the present, he cannot tell anything about the direction from which he has come or the destination toward which he is moving. It is necessary, therefore, in discussing trends to move back along the time co-ordinate into the past and also look forward and forecast, if possible, something of the future. Moreover, it is sometimes necessary to go back considerable time in order to see whether the rate of curvature has been increasing or decreasing. Therefore in discussing the tendencies or trends in mill construction, we must be pardoned if we go back a decade or two to identify the path over which engineers have passed to arrive at present day practice.

Development of the Mill Village.

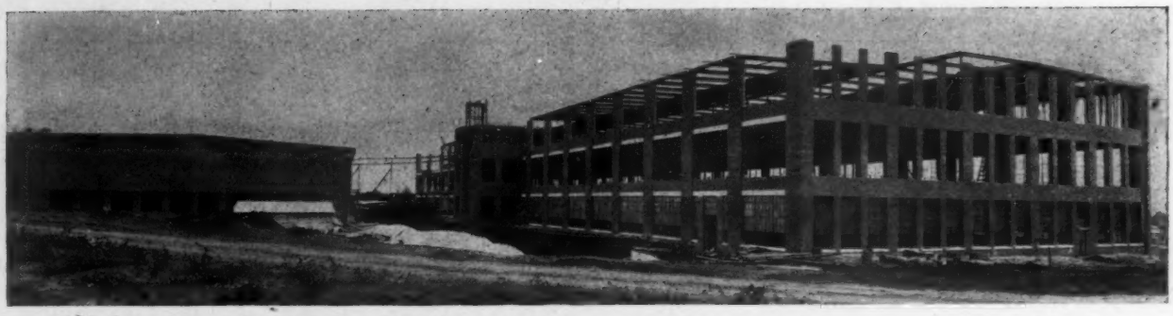
Possibly the most interesting of all curves to be considered is that of the mill village. I think that nowhere else have more startling changes been wrought. In the first place the existence of these housing developments as a part of an industrial corporation is, to a large degree, peculiar to the southeastern section and to the cotton mill industry. It seems that the construction of a village is admitted to be necessary in the South, if the best results in manufacturing are to obtain.

Certain corporations moving plants from the North to the Southeast have tried to evade this responsibility, being guided by their knowledge of northern conditions, where villages have not been essential. Sad experience has convinced them of its necessity and steps have usually been taken to remedy the omission.

The mill village has been, for a long time, an integral part of the textile development and bids fair to continue and even to assume a more important position. But the character of the village — how it has changed! Look back on a cotton mill in South Carolina, say twenty years ago. It is a drab and dispiriting picture. There are rows of cabins with a muddy track between. All the cabins are alike, and painted a rusty brown. The yards are frowsy and unkempt. At the intersection of two streets there is a well where the hands commune with "the old oaken bucket" and its attendant microbes. Back houses decorate the landscape. At dark, through the windows may be seen the gleam of the oil lamp. Needless to say, the people are in keeping with their surroundings.

Now visit a modern village, say that of the American Textile Company, at Atco, Georgia, and what do you see? A pleasant suburb of houses set back from asphalt streets, well curbed. A system of white way lighting standards along the grass plot running between sidewalk and curb. Enter one of these houses and note the plastered walls, convenient closets in the bedrooms, electric lights in every room, running water in the kitchen, and modern, sanitary plumbing. These houses differ from each other in exterior appearance and painting. They have front and back porches, concrete steps, composition shingle roofs, and garages for the family Ford.

Nor is this village an extreme instance, as shown by the photograph of the West Boylston Manufacturing Company's village at Montgomery, Alabama, in one of the accompanying illustrations. In fact, one village recently constructed in North Georgia has brick veneered houses with an electric stove and a



Construction Photograph, Showing Assembly of Steel Beams.

bath tub in every house. It must be admitted that the latter is quite in advance of current practice, but, no doubt, progress will eventually catch up with it.

Of course, many modern villages do not possess all the improvements cited above, but today none is considered up-to-date unless it has a water system, sewerage system, street lights, and electricity in all the houses. We have come along a very steep curve of improvement and the curvature continues, though possibly not at so great a rate.

Cleanliness is Conspicuous.

The conspicuous feature of the modern mill village is its cleanliness. The houses are well painted, the streets, though possibly not paved, are well kept. The front yards are decorated with little flower beds and brick edged walks. A new generation of mill help has been evolved along with their surroundings. They are a self-respecting, law-abiding people, by no means perfect, but far beyond the standards of twenty years ago.

It would seem that the wooden cottage has about reached its limit of exploitation. That is, design can improve or cheapen it very little. The materials entering into it are slowly increasing in cost. The brick veneered house is inherently still more expensive, and will so continue to be. Certain experiments are now being made in the construction of mill houses of "Gunite". That is, concrete blown in place with a compressed air machine or "gun". This construction involves radical changes in design, and methods of construction, but it promises a better house and the engineers may be able to make it, in quantity a cheaper house. It can be built with great rapidity, and has the advantages of requiring no painting, and of being fire-resistive.

Mr. EMERSON

as vice-president of Robert & Co., Inc., is a prominent mill engineer; having been associated with much of the construction activity in the South in recent years.

It is to be remembered that every improvement must be weighed in the balance of cost. No matter how enlightened the executives of the corporation may be and how much they may be in sympathy with the plan of providing the operatives with proper living conditions, they are also responsible for dividends and will justly scrutinize every expenditure to satisfy themselves that it will pay its own way. It is incumbent on the engineer to hold the cost of improvements within reasonable limits by means of shrewd design and economical construction.

General Features of Mill Buildings.

The mill buildings themselves have not greatly changed in general structure from those in use ten or fifteen years ago. The most pronounced variation is probably in the use of one-and two-story construction, rather than four and five-story buildings. The latter type was an importation from New England practice never required in the South where land values were low. Two or three-story buildings are less expensive than one-story, but the latter possesses some advantages, particularly for weaving. A very sensible compromise is reached by a two-story mill having the carding operation on the second floor with spinning on the ground floor, extending into a one-story weave shed at the same floor level as the spinning room.

Details Have Seen Many Changes.

The details of buildings have been very considerably changed. A number of these changes are compromised in the replacement of wood with some more permanent material. To particularize, about ten years ago cast iron columns began to be used in place of wooden columns. Today the wooden column is scarcely ever specified. A little later, steel factory sash was put on the market at a price which permitted its use. Today wooden sash would be regarded as an anachronism. The use of steel sash brought about sills and lintels of concrete, which are nowadays more generally poured in place rather than precast. Some five years ago steel beams and girders began to relieve the shortage of suitable large wooden timbers. As the southern forests were depleted it became increasingly difficult to get good long leaf pine timbers in 16 x 20-inch and other large sizes. Rejections of unsuitable timbers slowed up the work and made it expensive. Steel has been found entirely adequate, is accepted by the insurance companies and has the material advantage of permitting very rapid assembly, fabrication being done at the structural shops. Wood has also vanished from the stair tower, since concrete steps

are used. As an example of a minute detail which has effected an improvement, the outer edges of these stairs carry a raised parapet which prevents drip when the stairs are washed down. Pipe rail has taken the place of wooden banisters on the stairs. Steel doors are ordinarily used and no wood is permitted in the wash rooms.

In a modern mill building about the only wood used as a permanent part of the construction is that for roof decking and heavy flooring, together with the maple top flooring. The curve of change in this regard will probably be very slow from now on since this type of roof and floor construction is very satisfactory and planking of this character can probably be obtained economically for a good many years.

A View of the Mill and Part of the Village of the Hillside Cotton Mills, LaGrange, Ga.

Character of Roof is Important.

Nothing is so important in a manufacturing building as a good roof. Nothing has been found as yet superior to good, multi-ply tar and gravel flat pitch roof, so that practice in this respect has been stationary for some years except that some companies are guaranteeing these roofs for a period of years and giving bond.

The life of textile machinery is somewhat dependent on the floor on which it operates. The ideal floor system is one which is level, solid, and at the same time slightly resilient. This result has been ob tained by the—so-called—tar-concrete floor, which has been used by certain designers for many years, but is now coming into almost universal favor. This consists, in brief, of a bed of graded gravel, coated with tar over which is placed a bed of tarred sand. In this bed is imbedded heavy creosoted floor plank to which is spiked an intermediate planking. On top of all this comes a wearing surface of 15-16-inch maple. This floor meets all the requirements and is entirely waterproof. The floors in warehouses are commonly made of cement concrete, except where "dusting" is objectionable.

In mills heavily humidified, condensation of water vapor sometimes becomes troublesome. One inexpensive prevention device is condensation gutters which are grooves cast in the concrete sills with weep holes, to the outside. This cares for condensation on glass area. It is also desirable to put an insulating overcoat of cellular material in the roof. This is generally expensive, particularly if cork be used. Some other materials advertised as building insulation have been proved to absorb water and become of doubtful value themselves unless carefully protected. No ideal material for this purpose has been commercially produced. We anticipate, however, that the next few years will see the introduction of something more suitable than we have to work with at present.

The side walls of modern mills are now largely glass. The width of brick pilasters has decreased until in the so-called "day-light" type of construction they have vanished altogether, and the entire side wall construction is sash supported by "H" columns and heavy mullions. In our opinion brick pilasters will be generally retained in all construction except that of one-story buildings.

About three years ago a new type of glass, the Actinic, was made available for factory use. This glass is light amber in color and has the property of excluding most of the glare and a considerable part of the heat. It is now being widely used, and serves an excellent purpose as it obviates the necessity for painting or providing curtains for those windows subject to direct sunlight from east or west.

Concrete Had a Period of Prominence—

Some ten years ago there was a pronounced trend toward the construction of concrete mill buildings. This was taken up actively for a time. The curve of use went up rapidly and then began to fall again until today concrete is only considered for special problems. The cost is considerably more than for steel and brick construction. There arise also difficulties of supporting mechanical and electrical auxiliary equipment. The principal objection, however, is its

The Modern Village of West Boylston Mfg. Co., of Ala., Montgomery.

inflexibility and the difficulty of re-arranging machinery. Mill owners concluded that brick and steel would last long enough for them.

This flurry of concrete, however, served one good purpose. It emphasized the desirability of concrete for miscellaneous small uses. We have mentioned concrete stairs, but we also commonly have concrete footings, concrete copings, band courses and ornamental inserts on entrance towers. Such ornamentation with ordinary concrete can be made very effective given thoughtful design and its cost is very little, being in many instances a fraction of one per cent of the total building cost.

The foregoing gives a general picture of modern mill construction for walls, floors and roofs. Standard mill construction has merged into brick and steel construction and the net result has been that the building requires extremely little maintenance. Since the materials are brick, cast iron, steel, concrete and glass, there is nothing to deteriorate except the maple top floor which will wear down gradually.

Auxiliary Elements of Construction

Humidifiers.

TURNING to the auxiliary systems which enter in so many important ways into the course of manufacturing, we find that systems of humidification have not materially altered in the past five years. There has been, however, a much greater appreciation of what remarkable results can be obtained by proper use of a good system. Naturally there have been detailed improvements in heads and controls but the high duty head system is still the most popular with the central station a bad second and atomizer systems passing out of the picture.

There is, at present, a demand for a single unit which will heat, cool and humidify, in other words, a central station broken up into small units simplified, easily controlled, made compact, and low in price. Certain apparatus of this kind is just coming on the market, but it will possibly need considerable revision before it entirely meets the requirements above.

Humidifiers now circulate enough air to effect considerable cooling in Summer, and recent research in ventilation has shown the importance of the motion of air rather than its so-called freshness. In Winter the proper operation of humidity control has been assisted by installations of temperature control.

Fire Protection.

There is need for a clarification and restatement of the rules of the bureaus handling the inspection of fire risks for the insurance companies. There is too much variance in the requirements for different geographical sections. There also seems to be a lack of firm policy in any one bureau and while the requirements asked seem to become more onerous and expensive each year, there is no uniformity in their enforcement which results in a trading attitude, unfairness, and uncertainty. Engineers will gladly conform to any set of rules which can be regarded as fixed, reasonable and uniform for all parties.

There is one minor feature which might be mentioned. Elevated plate steel reservoirs have largely taken the place of concrete lined holes in the ground. By putting the fire pump under the static head the necessity for a priming tank is eliminated, and the pump is always ready to operate.

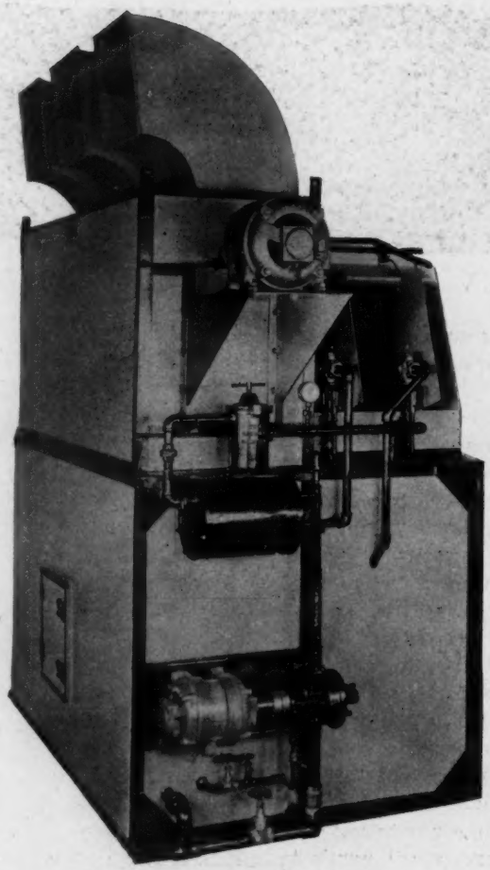
Heating Equipment.

The usual type of heating is by means of pipe coil radiation which has been in use for twenty years or more, but considerable progress has been made in the use of vacuum pumps and vacuum fittings to re-

Plant of Thomas Henry & Sons, Inc., Nashville, Tenn. A good example of combined two-story and one-story construction.

turn to condensation rapidly to the boiler, and keep the system free of air. The net result of this type of system is that the buildings heat more rapidly and with less coal.

Heat control is a very valuable adjunct for any mill. Starting about six years ago its use has been steadily increasing. Each set of pipe coils is provided with an air-operated valve. The compressed air which closes these valves is in turn controlled by a needle pilot valve which is operated by a thermostat. This thermostat can be set for any desired temperature and the steam will be cut off or on with a variation of one degree above or below the temperature set. The saving in coal resulting from the minimum use of steam will pay for the installation within a few years, but the principal advantage lies in the prevention of overheating with its consequent lowering of efficiency of the workmen. Another considerable advantage has been previously mentioned, that is, its assistance to the proper control of humidity. With heat control and a good type of humidity control, the regain or moisture content of the yarn can be exactly maintained. This results in better running work, more uniform yarn and a better production.



Unit Heater for Mill Use.

Unit heaters have been extensively used in other industries in recent years and to some extent in the textile industry. They are particularly applicable where there is not much lint or fly to stop up the radiating units. We anticipate that these unit heaters will be superseded by machines which will humidify as well as heat.

There is an increasing tendency to electric motor drive. The Corliss engine is definitely out of the picture. Most recent mills are purchasing electricity from the power company in order to invest the money saved from a power plant in productive machinery. In North Carolina approximately 90 per cent of the mills are electrified, and 75 per cent obtain their power from some power company. Other states are following along the same line.

A great deal has been written about the various methods of electric drive. Individual drive has been successfully applied to every machine in the mill and its use is now determined by economical conditions rather than engineering skill. In general the average size of motors has decreased continuously, but it appears that this has now approached the limit. Many mills will continue to install four frame drive motors for spinning and roving frames which will serve to keep the average horsepower of all motors around five or six horsepower.

The wiring for power and lighting is almost entirely done in conduit, and push button control with automatic switches is becoming increasingly popular. Switchboards and other equipment have become fairly

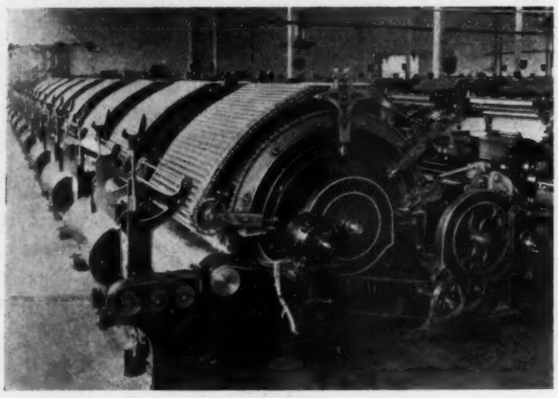
General View of West Boylston Mfg. Co. Mill and Village.

well standardized. The only recent change of any moment is the arrangement of low voltage trips on a delayed time basis. Should the power company's voltage drop below standard for only a second or two this device prevents the tripping out of the circuit breakers and thus maintains service.

In lighting the mills, the use of incandescent lights with steel R L M reflectors with white enamel interiors is still standard after five years or more of general use. Some use has been made of mercury vapor lamps, particularly in full fashioned knitting, silk mills and other plants on very fine work.

Most mills are now furnishing their operatives with ice water in the summer-time. More frequently the mills are installing motor driven refrigerating machines to cool the water in place of ice in the coolers. The refrigerating machine, with the low price of electricity obtainable, is cheaper, more convenient and cleaner.

It is quite noticeable that electricity is entering more strongly every year into the miscellaneous small services around the mill. This list of uses includes Klaxon horns, call systems, interplant telephones, elec-



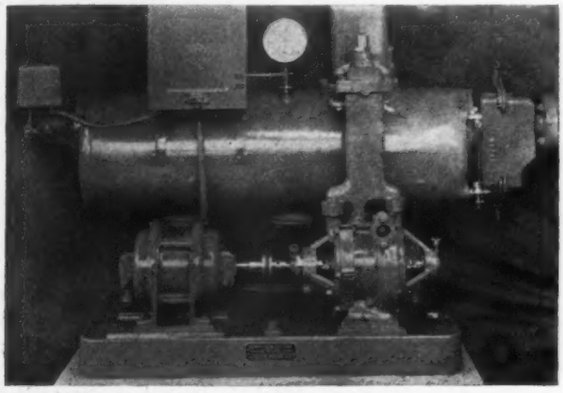
Individual Motor Driven Cards, installed 1922, Dixie Spinning Mills, Chattanooga, Tenn.

tric floor scrubbers, electric drills, stop motions, signal lamps, and dozens of others. It was thought some time ago that compressed air would be used in this way, but it seems that electricity has almost completely usurped the field to which reference has been made.

Summary and Conclusion.

To integrate and summarize the various changes in mill construction outlined, it seems that mill buildings are now more lastingly built and require less maintenance. The type of design used also permits more rapid construction and the time required can be more accurately forecast. All the auxiliary services have combined to make the mill operate more efficiently and to eliminate small wastes. Conditions of speed, temperature, ventilation, humidity, etc., are maintained more nearly constant, all of which results in a more uniform product and an increased production.

One of the most satisfactory improvements resulting from better engineering technique is summed up in better working and living conditions for the employees. A modern cotton mill is becoming a well-lighted, well-ventilated, cleanly place of employment, with all sanitary conveniences. The temperature is reduced by artificial cooling in Summer and running ice water is supplied. Actinic glass reduces the amount of heat and glare. A comfortable temperature, not too hot, is maintained in Winter. Air is kept in circulation at all

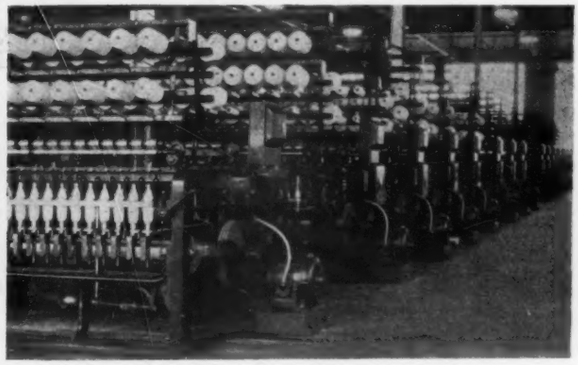


Vacuum Pump Equipment, Showing Automatic Features and Compact Design.

times. The amount of lint in the air is reduced by vacuum cleaning systems.

The people at home in the village have comfortable, individual type houses and not tenements. They have water, sewerage and electricity to serve them. Their surroundings are continually being made more pleasant and in certain instances almost beautiful.

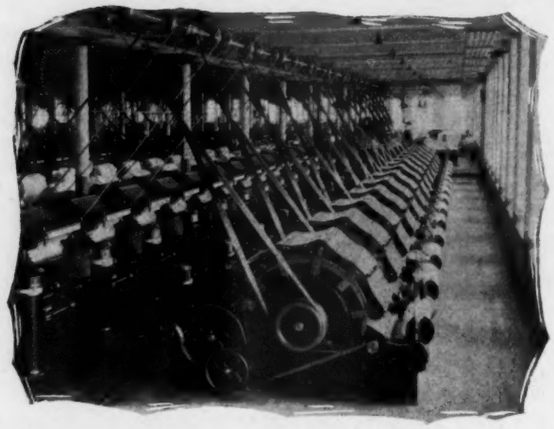
All of this cannot but re-act in the loyalty, self-respect and ambition of future generations of workers. This article can not touch on many human features, possibly of greater importance in fostering the same results; the mill school, Y. M. C. A., athletic teams, swimming pool, the band, judicious welfare work and many other activities encouraged by most of the far-sighted textile executives. After all, the human factor of contented efficient labor is of more importance than any improvements of machinery or plant. If the mill managements continue and extend their pres-



V-Shaped Individual Drive on Twisters.

ent enlightened policies, then unionism will be as remote as Russian Bolshevism. The trend to a continually higher type of employee is the curve to which everyone connected with the industry should give careful consideration, for the responsibility in regard to it is very great.

The Trend in Carding Practice



By J. O. Corn

Superintendent, Pacific Mills, Columbia, S. C.

Less Beating of the Stock; Better Opening; One-Process Picking and Lighter Carding; Slower Drawing and Even Tensions on Fly Frames -- With Better Control of Weights and Numbers Represent the Fundamental Developments in the Card Room.

THE common expression that history repeats itself cannot be overlooked in the mills, for in the stage of manufacturing, this is being practiced today. Twenty-five years ago it was general practice among the mills to have as large a mixture as possible. The advantages claimed in those days for it were not so broad as of today, for, generally speaking, to give the stock a chance to open and age was of most importance. And we agree that it was a help, but the trend today is for a larger mixing, because we know more about the troubles that are sure to follow when proper mixing is not carried out. Character, staple, grade and preparation—all these should be considered in a mix, and the larger the mix, the more even distribution of these elements will be secured.

There has been more attention paid to the mixing, opening and cleaning processes in the past few years than in the history of manufacturing, and there is a good reason for it. We have learned that if we do not start it right, we can never correct it. We have had to improve our cleaning in order to meet the poor preparation of our cotton due to the conditions under which it is gathered and ginned, and the mixing is of more importance because of the close grading our cotton receives.

The trend is also for automatic mixing to insure the same proportions of each bale or bales being used at a steady flow, rather than in bunches as is the case with hand feeding. This is being accomplished with different layouts, but the general principle is to arrange as many feeders as possible in the opening room in line with the bale stock. A small amount of cotton is taken from as many bales as is convenient for each feeder, and all feeders deposit on a carrier apron. As the apron passes from one feeder to the other, a small amount from each feeder is piled upon it, so that within a small portion of the apron there is a small amount from each feeder in the line. Therefore, if we feed from four bales to each feeder, and have eight feeders on one apron, we get a reasonable mix from thirty-two bales.

J. O. CORN

is superintendent of the Pacific Mills, at Columbia, S. C., one of the larger mill units of the South. He is chairman of the carding division of the Southern Textile Association.

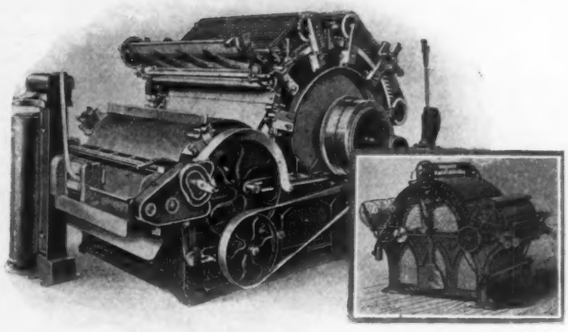
In the opening processes we have seen the most radical changes. The idea of beating the stock until it is clean has passed into history. Certainly the trend today is for as little beating as is possible to open up the stock for cleaning and evening, and the majority of this beating is by spiked beaters and not blades. The idea is for more shaking for cleaning, rather than beating. For cleaning without beating we have seen many types of cleaning trunks, openers, and conditioning machines of various types developed, but they have all been designed to meet the trend for cleaning without the more severe action of the blade on the stock. Again, we look back some twenty-five years, and find that a large number of the mills use some type of cleaning trunk. Probably only a small percentage had them ten years ago, and today we find them coming back into more general use. Why? Because it is a type of cleaning which does not injure the fiber and which is in keeping with the trend to clean without beating.

Then we come to the vertical type of opening, and while the vertical has a so-called beater, the cleaning is by no means a beating action. It is more of an aerating, or loosening up of the stock, with a provision to throw off the foreign substances, rather than to beat them from the cotton.

The horizontal types of cleaners perform the same nature of cleaning, with one advantage, by which, due to the horizontal movement, the lighter foreign matter has the law of gravity to overcome. Of course along with this

goes the major cleaning by the course of resistance to which the stock is subjected in passing through the horizontal, but still is not a blade action.

We cannot mention all the types of feeders and openers that may follow along these types, but they are all of the same general principle, and not a single exception is made to clean only with as little injury to the fiber as is possible.



The Card of Yesterday and Today—by Whitin Machine Works.

In the picking process, we have seen a most general reduction in beater speeds, or less beats per inch, with the advantages of the types of cleaners mentioned, the stock is so much cleaner and better opened when it reaches the picker that beating is not necessary; in fact it proves a detriment. Since the beating is not necessary, this has opened the way for a labor saving, which is one of the major problems in the mill to reduce cost. Hence we find two-process picking gradually being adapted, thereby eliminating the cost of one process.

Today we are entering upon a new era of picking, with a further reduction in cost—that is, one process picking. In this method we see a greater efficiency per machine, due to the fact that after the stock is once opened it is not compact again, being carried through the entire machine in a loose form. This within itself would reduce the amount of beating necessary, as the stock is held in a cleaning condition without being opened up again. With this advantage the evening can be made better, because the more thoroughly the stock is opened, the better chance the evener motion has to perform its work.

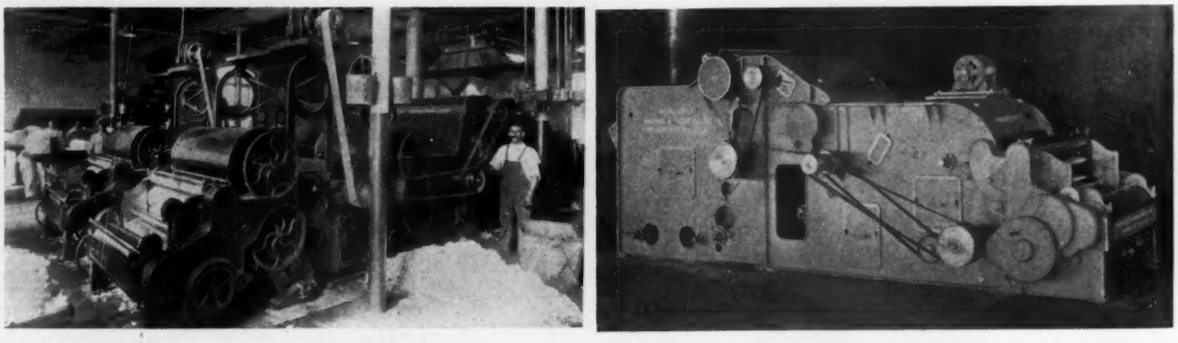
Summing up now the improvements from the opening room to the card, the trend of today is for more even mixings, cleaner stock, less beating, more even laps—all at less cost.

With the card we find probably the most divided opinions, yet it is one of the most important processes in the manufacture of yarn. The card is not considered to be an evening process, and therefore the stock must be even when delivered to it. Yet, on the other hand, the card can be so operated as to be an *unevening* process. Probably the greatest advantage to the card in the past few years has come through the realization of its capacity, in relation to producing good work. It matters not whether the lap is heavy and fed slow or light and fed fast, the capacity of the card remains the same. If there be any advantage to either, the advantage is procured largely in the lap before reaching the card.

We must consider that the work of the card is to clean the stock, separate and remove the short fibers, and, as is implied by its name, to card the fibers into a parallel condition. The capacity of the card depends upon the quality of the work desired. If good work is desired, the card must be given time, assuming that proper adjustments are made according to staple.

There are two items in card operation which have been greatly improved in recent years. They are the lapping and stripping, both of which are important attributes to good work. In lapping the card, an excellent method is to use the lap from the same picker each time, designated either by a mark or by its position on the lap truck. The reason for this will be discussed further when we reach the drawing process. A lap should never be allowed to run out, as the end, when jerked in by the licker-in, is apt to move the adjustments or jam the cylinder. And when splicing, the ends should be over-lapped only to insure the same thickness as the regular lap.

The stripping has seen several improvements. Various systems have met with approval and are also a saving in labor. Vacuum stripping is also a great advantage in removing the objectionable feature of dust. The fixed stripper is also a decided improvement, as the dust is well taken care of, and it has the same advantage as to labor saving. But with the number of stripping devices developed, the evil of light work immediately following the stripping was not affected until the continuous stripper was developed. While



The Equipment at the Left Was Recently Replaced by the Woonsocket Simplex Picker, at the Right, Two of Which, with Apron Delivery Between, Make the Duplex Picker.

this has not been adopted as yet in any general way, the theory of a clean card at all times is accepted with favor, and the elimination of the light work is a decided advantage. To show the interest and importance of proper stripping, we cannot fail to mention that a card fillet will soon be ready for inspection which requires neither grinding or stripping.

Drawing Frame Developments.

The drawing frame is purely a straightening-out and evening process. And while several changes in operation, and in the number of processes used, have been adopted, no decided improvement has been made to the machine, as in the preceding processes. But we can recall when the stock was over-worked by using more processes than were necessary, and we find today that the trend is for as few processes as is possible to obtain evenness. This consists, most generally, of two processes of drawing instead of three, as was often the custom of past years. And, in a number of instances and with very satisfactory results, this number has been reduced to one.

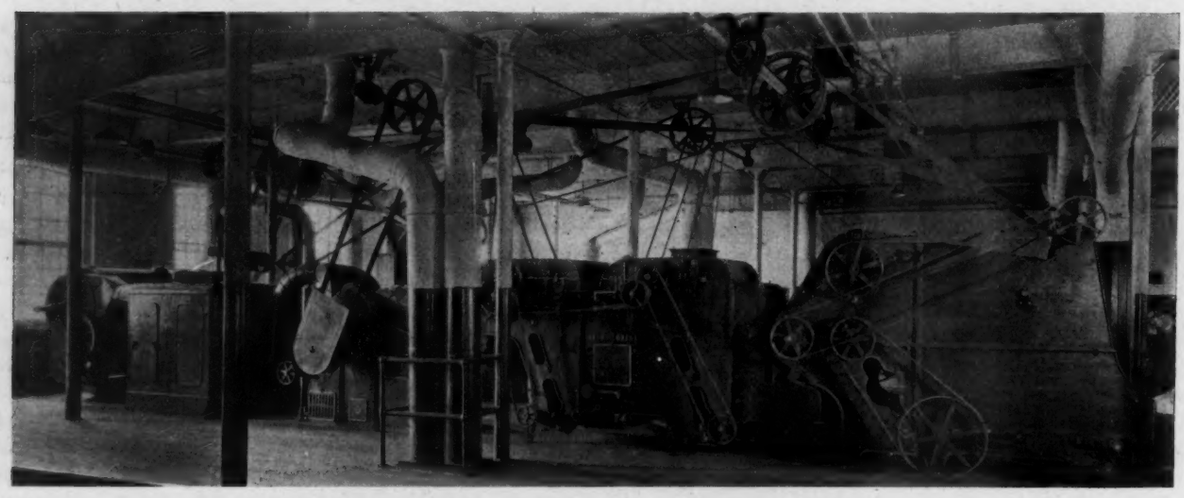
The other important practice which has been almost universally adopted has been to reduce roller speeds. As to what speed to run, I would not attempt to say, because we find speeds ranging from 225 to 350 r. p. m., but the *lowest* speed at which it is at all possible to keep up, under the conditions is, to my mind, the *proper* speed.

Various methods of creeling have been adopted, such as creeling the entire frame at one time, creeling three of the six doublings at one time, the other three being half full; and to creel one at a time as the ends run out. If the advantages of such are to be confined only to the creeling of the frame, there would probably be equal advantages and disadvantages with all. But a more systematic mixing has been worked out whereby these various creeling arrangements are all of material aid.

I mentioned in the discussion of the card that it is advisable to use the lap from the same picker on the same card, and by carrying out this same idea on the drawing, with the proper creeling arrangement, a mix can be perfected, which is of importance. If we have six finishes, and a lap is run from each at the same time, and the cans are so designated by number or color, these are doubled in on the same head at the breaker drawing. To creel the first drawing would then give sliver from 36 cards being run at the same time, and doubled into six cans on the front of the first drawing—these six cans being creeled into one head on the second drawing gives a mix of 36 cards in each finished drawing sliver.

Fly Frames.

The fly frames can be considered as a whole, as the importance of one applies to all. Certainly we have learned the importance of even tension, of as little twist as is necessary, and to exercise more care in the adjustment of rolls. There is not much that can be said as to the trend on the fly frame, only that every effort is being used to insure evenness.



Improved Saco-Lowell Opening Lay-Out at Pacific Mills.

Summary of Trends.

Now that we have touched upon the various processes in order, let us discuss briefly one in general, and a very important one—the keeping of weights or numbers. This has seen a decided change, and is still to see more changes. A more scientific system still has room for application. There is no one thing that can contribute more to good running work, day in and day out, than good even numbers.

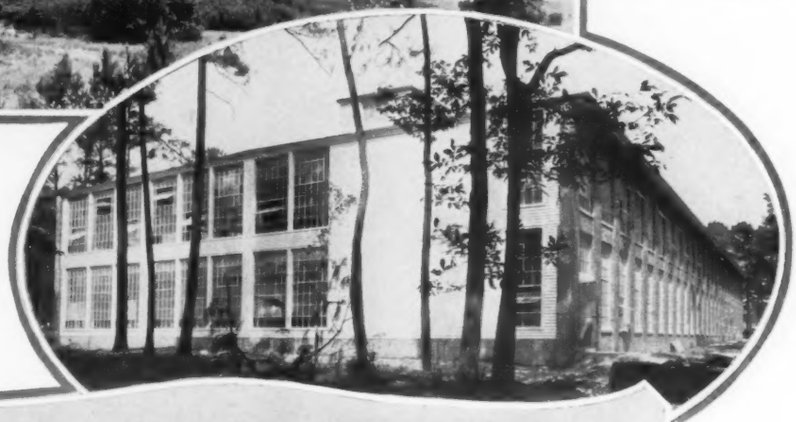
There are many things which affect numbers—they are almost too numerous to mention, but there is one thing that can be controlled to a limited degree, and that is moisture content. A great deal of good has been derived by working up tables according to the atmospheric conditions of the room and adjusting the weights to them. This is generally done in the picker room. Since this has proven of such a great help, the trend today is to start the stock under an atmospheric condition which can be held uniform throughout the entire carding, spinning, spooling and warping processes. This is accomplished of course by automatically controlled conditioning systems.

Some New Southern Mills and Extensions Erected During Recent Months

Left, Yarns Corporation of America, Spartanburg, S. C. Lockwood, Greene, Engineers, Inc., architects-engineers.

Right, Hartsville Print & Dye Works, at Hartsville, S. C. Robert & Co., Atlanta, architects and engineers.

Left, Slater Mfg. Co., Marietta, S. C. J. E. Sirrine & Co., Greenville, S. C., architects-engineers.



Right, Alabama Mills Co. plant at Jasper, Ala., one of ten erected in state in 1928. Robert & Co., Engineers.

Renfrew Plant of Brandon Corporation, Travelers' Rest, S. C. J. E. Sirrine & Co., engineers.

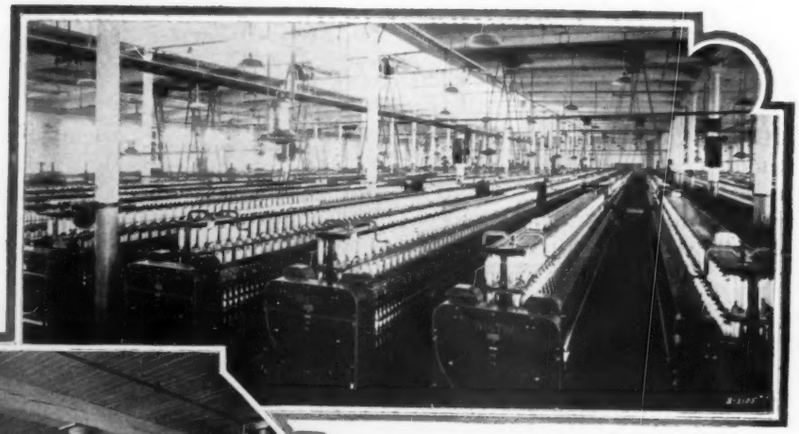
At the left, a photograph of the Westcott Hosiery Mills, Dalton, Ga., to which a substantial addition was made during the past year. Lockwood, Greene, Engineers, Inc., were the architects and engineers on this and the other work illustrated on this page.

Right, another example of hosiery mill expansion. In the foreground, the large addition made to the Powell Knitting Company, Spartanburg, S. C.

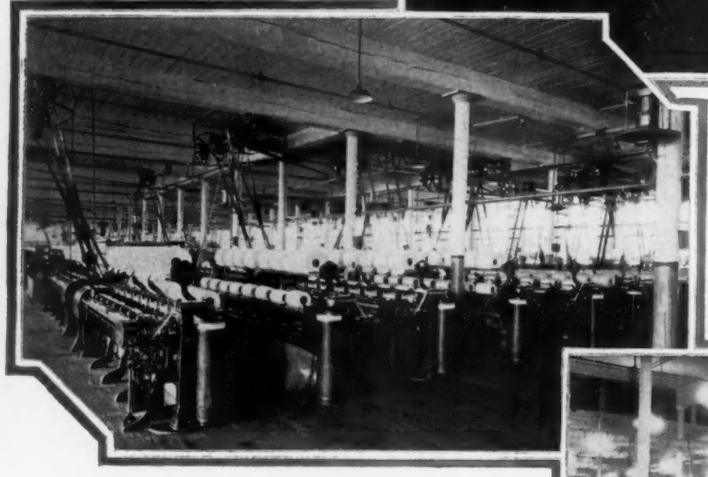
Left, power plant erected at the Powell Knitting Co., Spartanburg, S. C. The company originally operated in the "Model Mill" building, shown in the rear of the photo above presenting the large addition made.

Bossong Hosiery Mills, a new full-fashioned mill placed in operation at Asheboro, N. C., is shown in the photograph at the right.

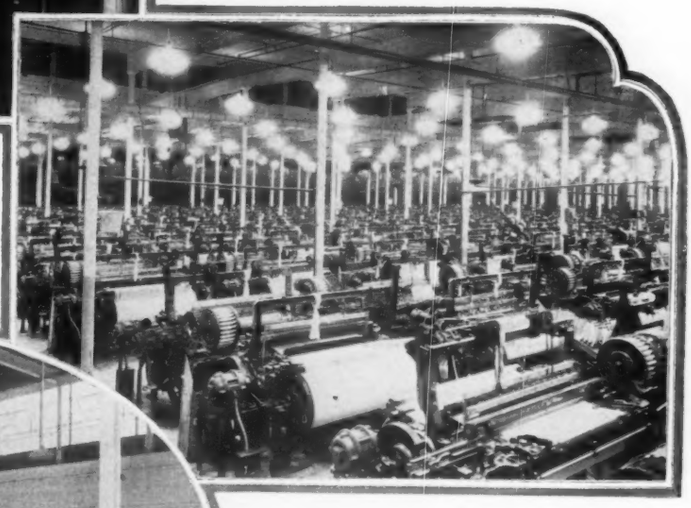
The huge addition made to the Chatham Mfg. Company, Elkin, N. C., blanket manufacturers, is shown at the left.



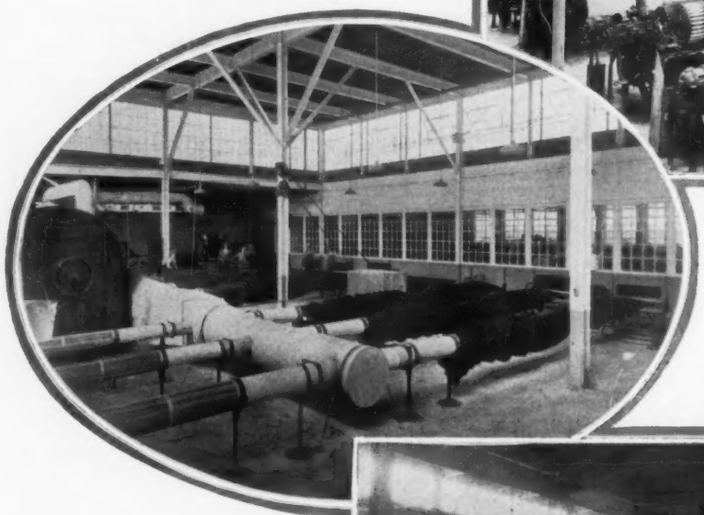
To the right, Spinning Room of Mills Mill, at Woodruff, S. C., where the capacity was materially increased by an addition. Lockwood, Greene, Engineers, were the architects-engineers.



The Whitin combers installed in the new Mills Mill at Woodruff, S. C., are shown in the photograph to the left.



Weave room of Slater Mfg. Co., Marietta, S. C. J. E. Sirrine & Co., Greenville, S. C., architects-engineers.

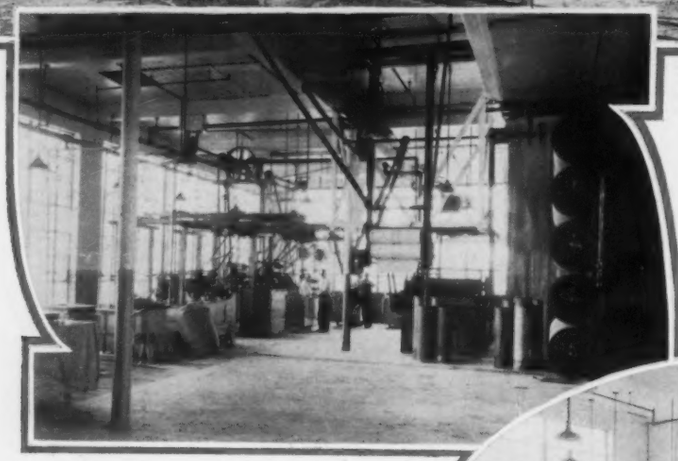


Turning and Drying Department at the Phoenix Mills, Statesville, N. C. Lockwood, Greene, Engineers, Inc., architects-engineers.

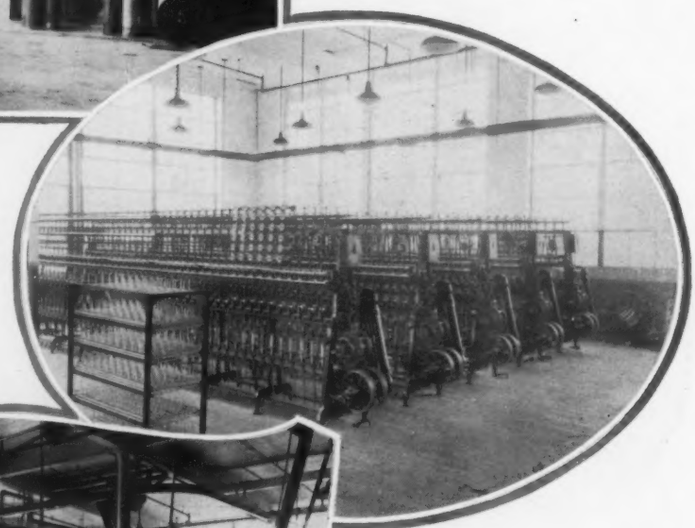
To the right, portion of Knitting Department, Westcott Hosiery Mills, Dalton, Ga. Lockwood, Greene, Engineers, Inc., architects-engineers.

Views of Carolina Dyeing & Winding Company Plant at Mount Holly, North Carolina

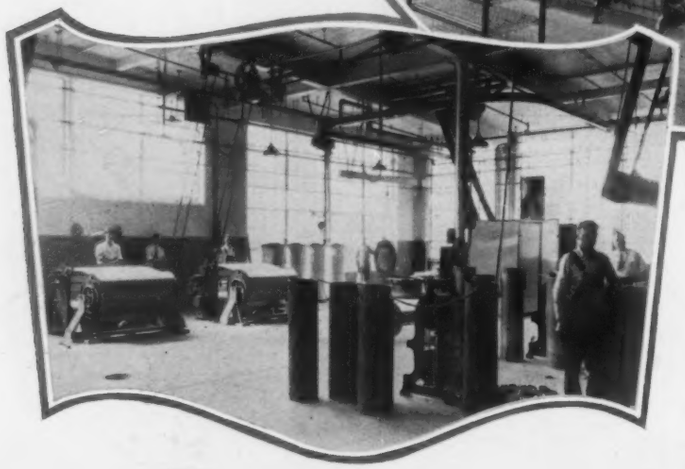
THE southern textile industry has been augmented within recent years by the establishment of several plants for doing commission work in cotton and rayon yarns. This development followed naturally the fast-increasing use of rayon and the finer yarns. An example of these plants is the Carolina Dyeing & Winding Co., at Mount Holly, N. C., where the photographs on this page were made. Edwin F. James is president. The plant is equipped for the dyeing and conversion of cotton and rayon yarn in various forms.



Left, the Cotton Chain and Ball Warping Department at the Carolina Dyeing and Winding Co.



Right, the Atwood 5-B Twisters Used for Processing Rayon at Carolina Dyeing and Winding Co.

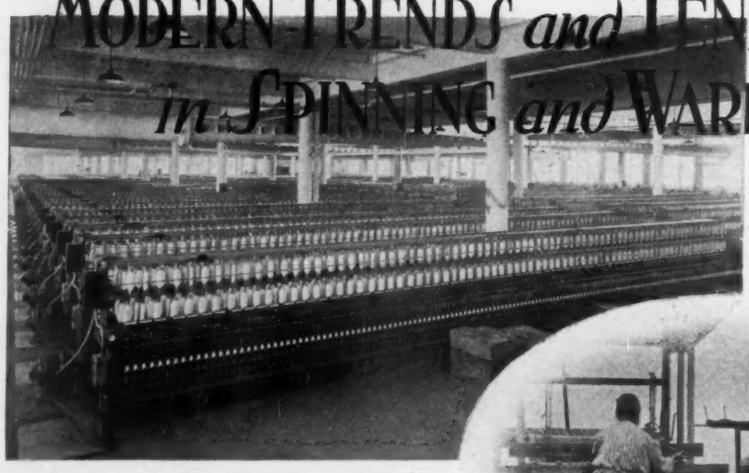


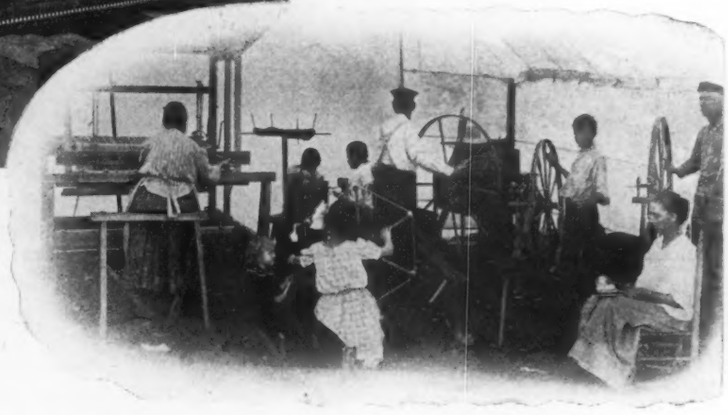
Left, Cotton Beam and Package Dyeing Department, Carolina Dyeing and Winding Co.

MODERN TRENDS and TENDENCIES in SPINNING and WARP PREPARATION

By Frank S. Dennis

Manager and Superintendent, Consolidated Textile Corp., LaFayette, Georgia.





Above, Modern Individually-Driven Spinning Room of American Thread Co., Dalton, Ga.

Right, Complete Cotton Mill "in the old days." Note carding, spinning, reeling and weaving.

Long Draft, Better Roll Coverings, Wider Gauge, Higher Angle Roll Stands, in Spinning,---and High Speed Winding and Spooling and Warping, and Fibre Head Spools, Are Among the Developments in this Department.

A SHORT time ago the writer of this article was visiting an exhibition where an old spinning wheel was being operated, and, allowing his curiosity to get the better of him, asked permission to "try his hand." Being reasonably successful he has been drawn to reflection as to the vast difference between the present highly specialized methods of yarn manufacture and warp preparations and the methods of older times when the spinning wheel was supreme.

These reflections have furnished a background for his contribution to the special issue of COTTON devoted to recent trends and tendencies. They may also account for some of the encroachments that he may make on the assignments of others.

A Little Bit of History.

It would be extremely hard to give proper emphasis to the significance of recent developments without reviewing the more important developments that have brought cotton manufacturing to its present status. It only required the invention of Arkwright, Hargreaves and others of their time to revolutionize the art of spinning completely. And thus it was that traditional methods were made obsolete. Fundamental processes were established, refinements and intermediate processes were added and the mechanical growth of our industry went on apace.

Necessity is said to be the mother of invention and we are told that such was the inspiration for the contributions made from 1738 to about 1800. A study of these reveals to us that first of all there was great need for something to supplant the spinning wheel, due to the increasing demand for fabrics made of finer yarns and a shortage of spinners who possessed the skill for this. Once the first spinning jenny and throstle frame were perfected, together with the first drafting rolls, there was immediate need for preparatory machinery.

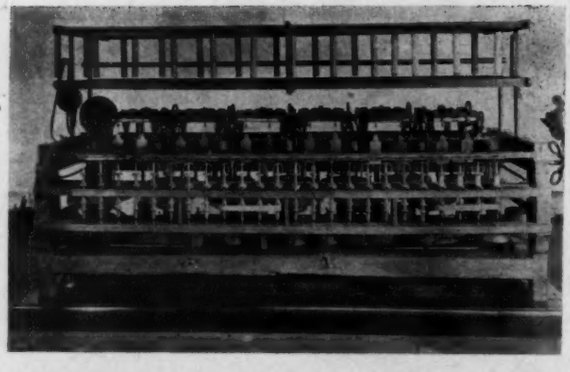
It is interesting here to note and compare the difficulties consequent to introduction of a new machine during this early period and the problems of the present day inventor. Cartwright's first spinning jenny was destroyed by his fellow laborers. Arkwright moved to Nottingham to find a more favorable public sentiment for his work and Jacquard's first machine was opposed by silk weavers. We are led to believe, however, that operating executives were quick to grasp the significance of these improvements and that capital was available to make possible the revolutionization of the industry.

Wonder What Their Costs Were!

It would be interesting to have available some of the cost data which would afford us a comparison of costs before and after all this took place. None can question that the actual cost of machine spinning was much lower than with the wheel spinning, but at least a part of this was taken up when it was found that additional preparation of the stock was advantageous. This then would have absorbed part of the cost advantages and we would wonder how long it would take this capital investment to return their cost in full. It is well known that today it is difficult to find capital for the purchase of improved machinery when it will

return its cost within three, four or five years. It is only necessary to raise the question with a progressive operating executive and he can readily mention various improvements that would so justify themselves and provide considerable cost advantages.

There is an economic principle which tells us that in any balanced industry the average producer determines the market. His cost would be average cost and he would neither make money nor lose it. Those who make money would have a lower cost, made possible by improved methods and machinery while with those losing money the opposite would be true. Would it not necessarily follow that the manufacturer who first adopts improved labor-saving machinery would enjoy his cost advantages for a longer time than his competitor who is not so progressive?



A Pioneer Spinning Frame, Installed in the Slater Mill, Pawtucket, R. I., built in 1790. Contrast it with the modern frames shown elsewhere with this article.

All of which may be very much beside the question of "Modern Trends and Tendencies in Spinning and Warp Preparation" and it was not my purpose to convey the impression that the entire industry was non-progressive. This is not the case and there are certain signs of definite progress notwithstanding the fact that it is not as general as it should be.

Trends in Spinning

FOR the sake of clearness it will be best that we should consider the question at hand in two divisions—mechanical and personnel. In the first group we shall place new machinery and parts, supplies and auxiliary equipment which is intended to improve the quality and quantity of work done with consideration of economies in manufacture intended to give some cost advantage. In the latter group will be placed the rearrangement of operatives' duties which have the same inspiration.

Spinning frames are now being made more ruggedly than before with special attention being given to factors that tend to preserve their alignment and stability under operating conditions. These are important improvements and make it possible for the mills to operate them at higher speeds. Cylinders are larger and heavier, being carefully balanced. Gears are designed for greater strength and smoothness and when practicable spiral or helical gears are used.

Spindles are longer and heavier, have larger whirls and recently there has been introduced a roller bearing spindle for which the manufacturers claim savings in power and oil as well as more uniform and higher speeds.

Two or three years ago there was much talk of higher spinning drafts and several special arrangements of rolls for high drafts were brought out. At that time it was thought that these would soon be more or less universally adopted. However, there appears to have been a lull in the general enthusiasm for these. Notwithstanding this, however, there is still some interest in these and as a problem it may yet be solved so that high drafts are entirely practicable without the use of better cotton or the danger of sacrificing some of the desirable qualities of good yarn. It would be impossible here to deal with all of the different types for the lack of time and space but there are possibilities here and it is hoped that the next few years will see some further definite trends.

There are many good mills on fine and medium numbers, both carded and combed, that have adopted the one piece "jump saddle" with the self-weighted or floating middle top roll. Some mills use the regular middle roll covered in the regular manner, others use a small bare steel roll and still others use a light wooden roller covered with flannel and skin. There is also a composition roller that is sometimes used. The general custom with mills who have adopted this type of roll weighting is to set the middle steel and top rolls as close to the front as possible, allowing the top rolls to "ride" on the end of the staple. It is well known that the best practice of setting rolls under the old system of weighting is to set the rolls as close as possible to avoid danger of cockles. One of the best features of this system is that it permits the closest setting without this danger and also without damage to the staple.

Mr. DENNIS

a past general chairman of the Textile Operating Executives of Georgia, is division manager and superintendent, Consolidated Textile Corp., LaFayette, Ga. He is now vice-president of the research organization, The Arkwrights, Inc.

At this time it is well to note that there is now a definite trend towards better materials and methods for covering top rolls. The purpose of this is two-fold: first in the interest of economy and lower cost, and second in the interest of better yarn. To the mind of the writer there is no place in the mill where the practice of false economy is more truly false than in the matter of roller covering. He has found from long experience that the best is the cheapest here.

There has been some discussion lately as to the relative merits of cork covering as compared with flannel and skins. Unquestionably cork coverings well applied offer many advantages to

Above, Barber-Colman Automatic Spooler; Right, Delivery End of Spooler with High Speed Warpers in Background.

mills on medium and coarse numbers. After the rolls have been in service for sometime they can be removed and buffed and this can be repeated several times before a new covering is required. It must be remembered, however, that there are vast differences in the qualities of various flannel and skin coverings and that in some cases the greatest savings can be made in this way. Good all wool flannels carefully fitted and cemented to the roll are a necessary foundation for the cot. The bias cut is to be preferred to the straight cut as it minimizes the effect of variations in cloth size and allows some advantages to the roller coverer in the matter of fitting. Glue for sticking the cloth should be fibrous and strong and the cake form is preferred as cleaner than the flake.

For several years past there has been a great deal of interest in the types of wind used on spinning frames and many mills which formerly used warp wind have changed to filling wind. There are several reasons for this. Filling wind frequently makes it possible to get higher speeds due to the fact that there is less strain on the yarn and ballooning can be more definitely controlled than with the warp wind. In spooling from filling wound bobbins it is necessary to use a tension device and the yarn is pulled off over the end of the bobbin at a uniform tension rather than being put down in a bobbin holder and pulled off against the weight of the bobbin. This permits a good control of tension and preserves some of the elasticity of the yarn.

Other mills have found that filling wind did not suit their conditions and have adopted what is known as combination wind, which derives its name from the fact that the frame is equipped with a warp wind cam but a filling take-up is used. This type of wind can be used on the automatic spoolers where it is impossible to use filling wind yarn and offers some advantages over the warp wind formerly in more or less general use. Local conditions would to some extent govern the question as to which is the best type of wind for a particular mill.

Base price quotations for spinning frames presume a gauge of 2¾-inch and wider gauge than this is figured as an extra. In spite of this, however, the best thought of the industry is in favor of a gauge wide enough to obviate the necessity for separators. The best quality of yarn cannot be made on frames of insufficient gauge and slashing cannot effectively lay the fibers whipped out on separators. It is entirely probable that within a few years at most there would be a saving in flyings sufficient to justify the extra cost of wider gauge.

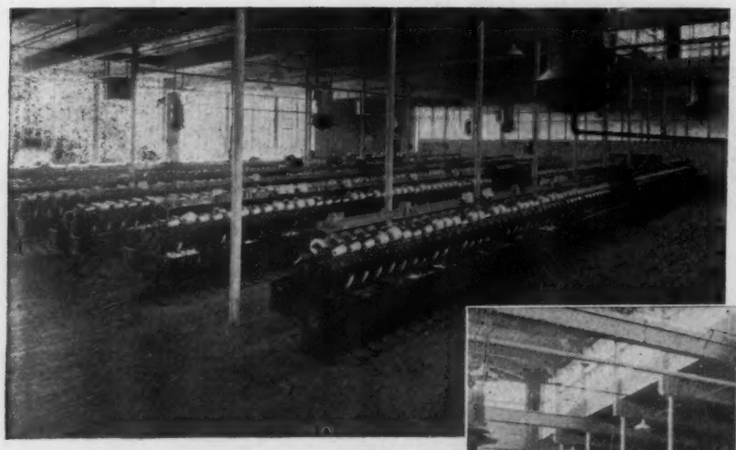
Another interesting change in some makes of new spinning frames is in the angle and height of roll stands. New stands are higher and the angle of the stands is greater which makes the passage of the yarn through the guide wire easier.

There are several other features that can be incorporated in new spinning frames that entirely justify the cost. Ball or roller bearings at vital points make for smoother running and less oiling and therefore less repairing.

Every now and then some practical mill man develops something new that gets a "big hand" from the mills. An instance of this is the underclearer roll covered with a renewable paper tube. These last longer than the cloth covering, are easier cleaned by the spinner, and are less likely to cause ends to come down than cloth covered rolls.

Warp Preparation Developments

SPOOLING, as it has been known for years past, has suffered at the hands of inventors during recent years. Although one make of high speed automatic spooler still retains the name, there is nothing in appearance or the form of package that it makes to confirm the appropriateness of its name. The use of this machine necessitates also the use of a companion high speed warper. Cone winders have also come in for their share of popularity, in place of spoolers, for use with a special magazine creel which permits continuous high speed warping. The spool manufacturers,



The Universal high speed winding and warping system as installed at the Chicopee Mfg. Corp., Gainesville, Ga. The Universal winders are shown above, with the Entwistle high speed warpers at the right.

not to be cut down, have recently announced a new type of spool creel that also permits of high speed spooling. I shall attempt to treat these three developments in a brief manner to point out the advantages of each.

Automatic spooling does as its name suggests, largely eliminate the human element in this important process. Yarn is taken from the spinning bobbins which are placed by the machine tender, a weaver's knot is tied automatically and the yarn is wound on a cheese at a speed of about 1,200 yards per minute. The only work done by the operator is to place the spinning bobbins in their proper places and the end of yarn for the knotter and then to take down full packages. This machine, in my personal opinion, is the greatest contribution ever made to the industry.

Cone winding has been improved and perfected to the point where it has displaced spooling in many mills and this form of package makes possible the use of improved warper creels and high speed warping. There is no "dead yarn" in service and savings in yarn waste are considerable. Winders are regularly equipped with slub catchers and yarn cleaners; this makes for an ideal condition in some mills.

Some attention is being given to spooling at high speeds on machines of the same general construction as the older types of spoolers and it is thought that the development of a higher speed warper creel for warping from spools will give impetus to this.

Fiber-head spools in place of the old wooden heads are fast becoming popular with mills still making this style of package and they offer many advantages. There are no splinters to damage the yarn, they last much longer and almost invariably are guaranteed by the manufacturers against heads becoming loose and coming off. By reason of the fact that the heads are thinner a larger traverse can be had which means longer section beams and less yarn waste at the slashers.

Improvements in warping have been made possible because means have been found to control the tension of the individual strands of yarn. The solution of this problem has made it possible to warp yarn at the rate of 500 yards to 600 yards perminute. This calls for a well-balanced machine and beams, where used, and leaves the yarn less damaged than is true with older types of machines.

In connection with the automatic spooler previously referred to, the yarn is wound in the form of cheeses which are built on a ball-bearing core. These are conveniently arranged in groups before creeling, and it is necessary that each end be carried forward and through the comb when a new beam is started. There are individual brakes built into the creel that are instantly applied when the warper is stopped.

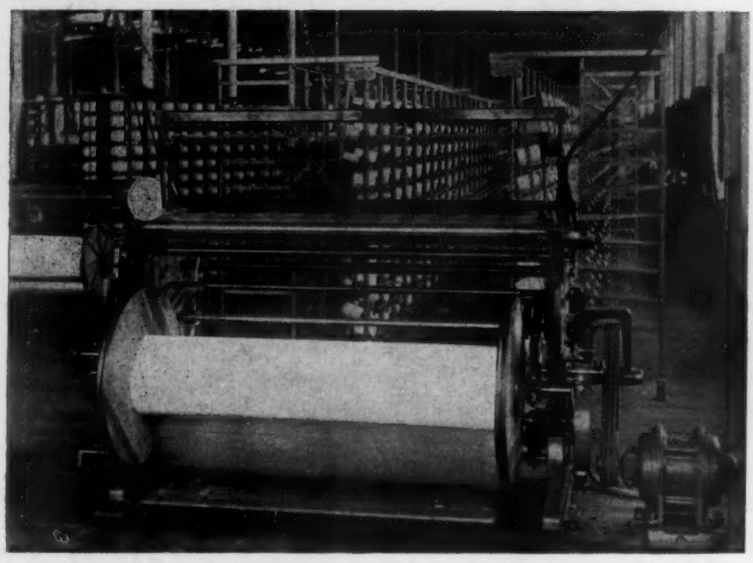
In the case of the cone creels, these are of the magazine type and the yarn is delivered over the small end of the cone. Tension is controlled by individual attachments. The last end of the yarn delivered from the old cone is tied to the first end of the new cone and the transfer is effected without any difficulty, while the warper is running. For this reason, it is only necessary for the warper to be stopped for doffing and broken ends. Warper speeds from this type of creel will average 300 yards per minute.

The writer has no detailed information regarding the new type of creel which allows high speed warping from spools, but understands that it is of the magazine type which permits of continuous warping, and that the yarn is delivered over the end of the spool. This feature would eliminate dead yarn as is necessary with the old system. It seems that this development would offer some advantages to mills desiring to install high speed warping without making any change in their spooling.

Extending Labor in the Spinning Room

TAKING up the question of trends in the handling of personal problems, we find that here too better methods are being used.

As in mechanical problems, necessity has maternal instincts and, as was to be expected, the intense competition of the past few years has promoted a keen interest on the part of operating executives in working



The Lestershire system of high-speed warping. The yarn unwinds continuously over-end from stationary fiber-head spools in creel. The magazine principle is used, permitting continuous operation without stoppage for creeling. Warping speeds between 350 and 400 yards per minute are used. The magazine creel feature eliminates the problem of dead yarn, and, of course, the spools can be filled on the regular type of spooler.

out economies by the elimination of waste effort and lost motion.

Spinners are being given as much work, that requires their skill, as they can do, and they are being relieved of much of the drudgery of their jobs. Under this system they set in roving and keep the ends up, but they do no cleaning, this being done by less skilled labor. Spinners are given about twice the number of sides that they tended before, and it has been found that no hardship has been worked on them. Cleaners take care of about three times as many sides as were formerly tended by the spinner.

Looking into the Future.

It is to be expected that the immediate future holds many secrets and that while we are now denied a clear understanding of their exact nature, present conditions indicate something of their general character. General interest is being manifested by all connected with the industry, and we shall expect radical progress in mechanical and personnel problems.

As has been previously noted, more than average interest has been shown in spooling and warping. The result has been that we have machines and processes that are radically different from their predecessors. The best engineering skill has been directed along these lines and the results are an inspiration. Shall we not expect this interest to be transferred to other processes—perhaps spinning?

Automatic cleaning and doffing, centralized lubrication, higher speed operation, and longer drafts without imposing any undesirable conditions —already there is evidence of thought on these things and some progress is being made. The point is, however, that there is not yet a machine that would make it entirely uneconomic to continue the operation of regular types of spinning frames.

It is being argued that many mills are continuing the use of old machinery without reason, and that in so doing they have been non-progressive. While this is doubtless true in some ways, the writer cannot close without offering some explanation for this. Operating executives have been hard pressed in devising means of carrying on, where it seemed impossible to make renewals that perhaps should have been made. Upkeep has been systematized, slight improvements have been made to existing machinery, and they are now able to get a condition that compares favorably with their competitors'. Theirs has been the burden of doing this and also theirs is the penalty of being denied renewals which ordinarily might have been secured.

This is an indication of the abilities of the operating executive—clearly demonstrating that for his part of the task in meeting the newer conditions, he is suitably equipped; that he will "measure up" when the other necessary elements assume their proportionate responsibility in the march of progress.

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Compare any new model of spinning frame with the model of the year 1790 as shown on a previous page, and the differences will be most striking.

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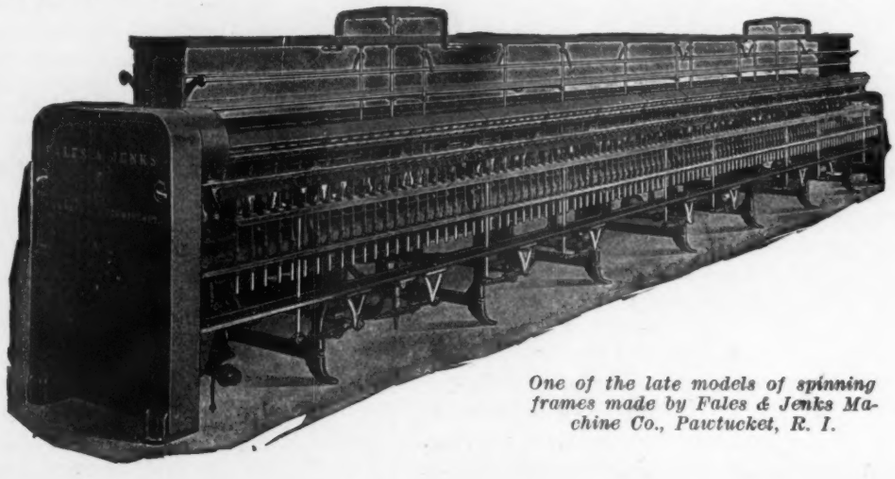
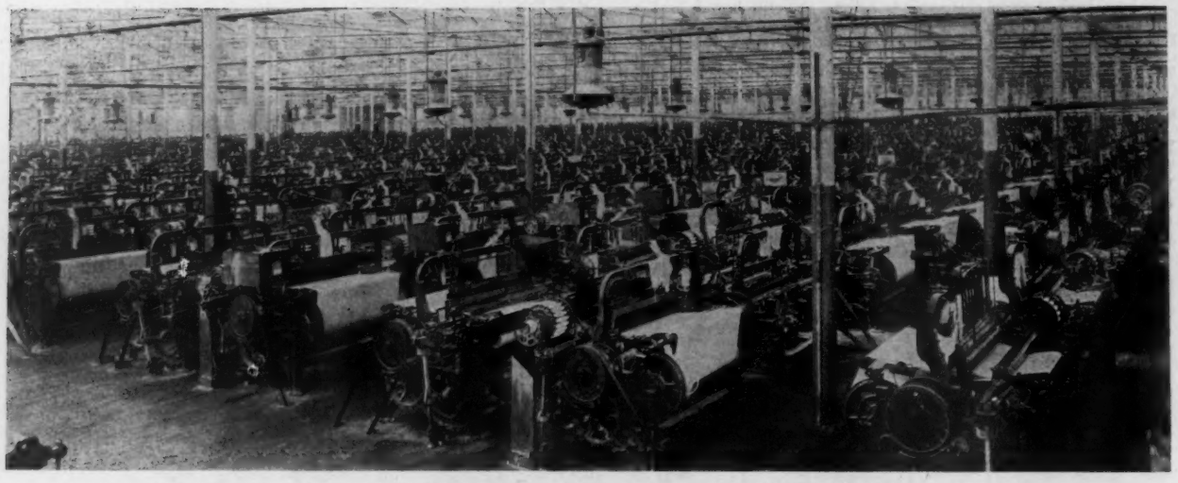


One of the late models of spinning frames made by Fales & Jenks Machine Co., Pawtucket, R. I.



Over 1700 Draper Looms in the Lanett Mill, Lanett, Ala.

The Weave Room Situation *Today*

By Sidney S. Paine
President, Textile Development Co.

Considering the Extension of Labor over More Machines, Mr. Paine Treats this as the Outstanding Development in Weaving; in addition to the Many Mechanical Improvements.

VERY few roads are straight lines between two cities. Neither is any worthwhile progress made, whether it be in art, or science, or manufacturing, which is always in one direction. Even human nature is variable in its trends, as it is subject to many different influences. Sometimes the predominating influence is conservative, sometimes it is extremely progressive, and at other times, it is somewhere between.

This combination of direct, advanced, lateral motions, and even those going backwards, have all been noticed in the cotton mills for the last few years. The industry, as a whole, is undergoing a tremendous change. The standards of yesterday are too antiquated to be the standards of today; and yet, no one can look ahead far enough to map out the route to be followed very far ahead.

Progress in the Weave Room.

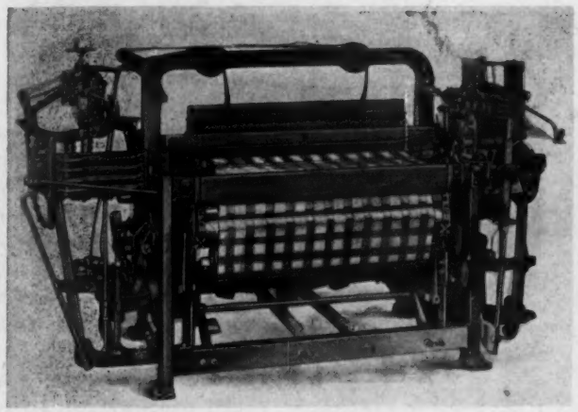
To be somewhat more concrete, around five years ago, manufacturers were rather firmly of the opinion that looms in a weave room were being run very economically, and if the work was laid out on the basis that had been considered standard for several years, no considerable saving could be made. It was no mean task to convince the mill managers that by measuring the fundamentals of weaving and determining accurately the causes of various difficulties, by functionalizing the task of those working on the looms, it was possible to save very high percentages of the weaving costs. This was considered radical, extreme, and even crazy. Many well-established mills refused to consider such things as being too wild a dream.

Today, however, the situation is reversed. During the last five years, tremendous strides have been made in some mills. Weaving costs have been lowered, weavers are getting higher wages, and the quality of the cloth is higher.

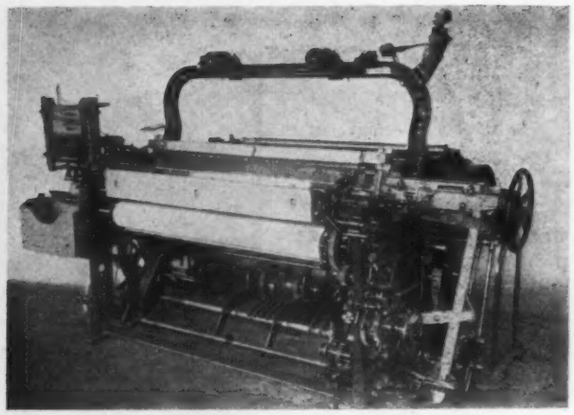
This has been done in a great many mills, and the results have been very gratifying to all concerned. Many other mills, however, have heard of the work that has been done in the mills referred to, and have truly said, "If other mills are doing it, our mills can do it, as the men in our mills are just as smart as the men in the other mills." They have found out, for example, that Mill *A* is running 80 looms to a weaver on a given construction, and filled with enthusiasm, have ordered their mills on similar constructions to operate with 80 looms to a weaver without any preparation whatsoever. Much to the surprise of these men, the results have been very unsatisfactory. The costs have been high, the help overworked, and dissatisfaction has resulted until the old system was put back into force. It is logical that these results be obtained, as no real progress can be made until a thorough and logical preparation has first been made. In other words, the difficulty today is not to prove to a mill that progress can be made, but is to restrain the mill and seek to have them walk before they run.

As has been stated, during the past five years, weaving has been subjected to many changes. Some of these changes were decided improvements while others were of doubtful value. In order that we may understand more fully what these changes were, let us review briefly how the average weave room was run some years ago.

A weave room was directed by an overseer, who was responsible to the superintendent to produce as much cloth and as good quality as was possible under the existing circumstances. It was the custom to place



New Crompton & Knowles Cotton King automatic loom.



Stafford five-harness shuttle-changing loom.

a learner with the regular weaver for a short period; then, the learner was given a set of looms. If the cloth produced by the weaver was defective, the weaver was called and told about that particular defect.

The loom fixers were given a section of looms to care for, without any specific instructions; i.e., how the looms were to be fixed was left to the direction of the fixer. The amount of humidity in the weave room was left to the overseer. He judged what amount of humidity to keep in the room by his own past experience. If the production decreased or the quality of the cloth was poorer than usual, all loom fixers and weavers were lectured severely until the condition was somewhat corrected.

Some mills made better cloth and higher production than others. When one of these particularly good mills was investigated to find the reasons why it was so much better, it oftentimes turned out that, owing to some condition peculiar to the mill or one of the variables of the cotton industry, the same progress could not be made in another mill by the same methods.

There appeared to be no method of getting a definite statement of the actual condition of the machinery or of the product being made. They had no means of measuring just how the looms were running from hour to hour, or day to day. The superintendent would ask the overseer "How is the weave room running today?" and he would say "Good," "fairly good," or "fair," using as a basis the condition that the room was in the last time he was asked this question.

The loom fixers were each taught how to fix in different places, or from different people, and in the majority of instances they did not agree with each other upon all settings pertaining to the looms. In other words, there would be three sections of exactly the same kind of looms, running exactly the same cloth, and an inspection would show that each fixer had different settings. While all three fixers would agree in about 80 per cent of the settings, there would be 20 per cent that would vary.

S. S. PAINE

president of the Textile Development Co., Boston, was graduated from Brown University in 1908. He was superintendent of the Lawton Mill, Plainfield, Conn., from 1917 to 1921, when he was made manager of the Cotton Research Co., which position he held until 1924, when he organized the Textile Development Co., which now has extensive European connections.

How Things Were Changed.

In the first mill to make a really scientific study of weave room variables, and all variables in other departments that directly or indirectly concern the weave room, it was decided to standardize everything in the weave room that could be standardized, so that it would either be "all right" or "all wrong"; the theory being that if it were "all wrong" it would show up more quickly. A job analysis was taken of the different weavers. These were compared, and it was found that there was a great variation in the human element. In order that this might not enter into the study, the slowest weaver in the weave room was taken as the basis. A similar job analysis was taken on loom fixing. The results of both these studies indicated that a large proportion of the work that was being done was needless work made by the operatives themselves.

The next study was made of the machines: when and why they stopped? After tabulating thousands of machine stoppages and successfully tracing the defect back to its source, it was possible to eliminate many stops with the assurance that they would not return.

To get some idea of how much difference this makes in a weaver's work, let us take, for example, a weave room of 2,000 looms, where each loom averages one stop per hour. In 55 hours there would be 2,000 $\times$ 55 or 110,000 loom stops per week from defects. This stop was reduced to .3 of a stop per loom per hour, making 33,000 stops per week, instead of 110,000, a reduction of 77,000 stops per week.

As has been said before many mills have ill-advisedly extended looms, without making the proper preliminary study, and without correcting conditions and operations in the weaving and other departments. This is an in-

justice to the help, and cannot help but fail because the defects responsible for the loom stops have not been removed.

I could give many illustrations of this point. One mill was attempting to run 50 looms to the weaver with a loom stoppage of 1.5. This made 75 times an hour that the weaver had to piece up an end and start the loom. This was asking the weaver to do an impossible job. After corrections were made and the necessary causes of loom stoppage eliminated, so that the loom stops were brought down to .4 per hour, the weaver should run 80 looms, starting up a loom 32 times per hour and having a very easy task. In another mill, where some preparation had been made, a standard was set as .8 stops per loom per hour. The loom stoppage before the work started was about 4. When the stoppage had been reduced by 2, the mill was very anxious to extend weavers. With the stoppage down to 2, if the mill had extended the weavers to a larger number of looms, it would be asking the weavers to piece about 2½ times as many as they ought. This was obviously the wrong way.

I cannot emphasize too strongly that, in my mind, the greatest danger today and the surest way to failure is to proceed blindly. If a mill asks its help to do more work than is reasonable to expect, the mill will lose rather than gain. The task of extending weavers is not a job that should be expected of the weavers, but the responsibility is rather that of the management and its consulting engineers.

A Vista of New Weave Room, Mills Mill, Woodruff, S. C.

Finding the causes of defects, and tracing the defects from the weave room through the several preceding processes is a specialized work, and should be done only by those men that are trained for that particular purpose. A good overseer can trace only those things in his department, but he has no authority to go back to the preceding departments.

In the weave room, of the possible eliminations of loom stoppage, possibly 10 or 15 per cent can be eliminated in the weave room; the other 85 to 90 per cent of the loom stops are directly caused by some machine condition or operation in the previous departments.

To repeat, the only successful way to extend weavers is to make a thorough and logical measurement of the fundamentals that control the yarn or the looms.

Many cases have arisen where the weavers would prefer to take more looms under the old system of weaving and not have battery hands. There are several ways of arranging the task of a weaver. It is felt that very little difference is made as to what arrangement be made, if first the unnecessary causes or obstacles be removed.

In concluding, I would say, as I did when starting, that the greatest danger today is ill-advised and comparatively blind progress of trying to accomplish large results with inadequate preparation.

An Installation of Stafford Shuttle-Changing Looms.

PROCESS TRENDS IN Dyeing, Bleaching *and* Finishing

By Paul F. Haddock
Southern Manager, A. Klipstein & Co.

WHEN the Editor of COTTON suggested my cooperation by preparing for him the subject matter for this article, I very readily consented. Possibly because I am the possessor of a one-track mind, I must have been thinking only of the accommodation it would be to our good friend Bob Philip, for I love COTTON. Even though the *trend* today would lead us to believe that a vast percentage of this world's population are partial to wool and silk not forgetting Celanese and rayon, I still love *cotton*. But at the time I did not realize just what I was stepping into, and I am wondering now if the Editor thought he was congratulating me by believing I kept up-to-date in all the many and varied processes relative to bleaching, dyeing and finishing or whether on the other hand he was suggesting that I was an old man with a good memory.

Mr. HADDOCK

is Chairman of the Dyers', Bleachers', Finishers' and Mercerizers' Division of the Southern Textile Association. He has for years been connected with the southern finishing industry as southern manager for A. Klipstein & Co., having had previous plant experience.

A good memory is a wonderful asset and ought to be cultivated by all persons connected with bleaching, dyeing and finishing processes, because the knowledge gained by the bitter experiences and the mistakes in the past is a *trend* that will lead us to efficiency in the future.

"In the Days Gone By."

Today, as I sit and ponder over many of the old formulas now in my possession, including those that were handed down to me by my father, many of which originated with my late grandfather, I can only have the greatest of admiration for the accomplishments of our predecessors. It is surprising, that with the rule-of-thumb methods of days gone by, these pioneers were able to do such wonderful work—and wonderful work they must have done because we have proof of it as is evidenced by a trip through any of the old mansions, museums and palaces of Europe and the United Kingdom, where we can find tapestries and fabrics of all descriptions dating back to the days of King Tut. The colors and finishes still beautiful to behold, produced when colors were few, chemistry in its infancy, and textile machinery unheard of. We can only assume that these men were specialists working on small lots, and I have often wondered just what they would have done had they been faced with an order demanding the same bleach, shade and finish on millions of yards as is the requirement today, but seldom the order.

Bleaching agents seem to have been chiefly those of rain and sunlight, and the process that of much handling and labor. As time went on chemicals came along and with the chemicals came textile machinery. Boiling was one process through which the fabrics passed many times, but this seems to have simmered down now to the double-boil for lime and ash bleaching—the single-boil for caustic soda and sodium peroxide bleaching, and not infrequently we hear of firms that have adopted the cold bleaching method eliminating the boils altogether, and while we do not have a distinct *trend* in that direction we must not lose sight of the fact that the process trends are only marching along at the same rate of speed as fabric trends. Who makes a fabric today that is supposed to last for hundreds of years and if any one did, who would be the purchasers? Certainly not the flappers of 1929, whose minds change more often than the moon and whose garments would appear to be changing in a corresponding ratio. The trend of the day seems to call for cheaper materials and more of them and while this article must not be construed as referring to the fabrics for the garment industry alone, it more or less applies to all textiles—the processing many times being contingent on the price. It would seem safe to say, however, that the quick processes of today are equally suitable for the short life fabrics in vogue, many of which spend a goodly portion of that life in a modern laundry, which is in reality, though in a milder form, a continued or series of bleachings; sometimes I am afraid this treatment is not so mild, which often spells sudden death.

Dyeing.

Dyeing originated many years ago with the application of vegetable colors to textile fibers. These colors were followed by mineral dyestuffs and then finally (thanks to Perkins) came the anilines and the many groups of same which include direct, acid, chrome, basic, sulphur, vat colors, etc. While the *trend* has been and is still today towards the adoption of modern dyestuffs on account of their convenience in use —which convenience is represented by the simplicity

of application and the shortness of time—it is still interesting to know that even today vegetable colors and mineral dyestuffs still find a market for specific requirements. The process of application is virtually the same today as in days of yore with the exception that hand dyeing is now practically obsolete—most everything is machine dyed and said machines are sometimes determined by the equipment at the dyer's disposal, sometimes according to the color to be employed and in other cases according to fiber or fabric to be processed. The greatest trend in dyeing processes today is in the saving of time, the actual application of which usually consumes about one hour. It is very convenient to be able to dye materials more rapidly than the change of styles, which is quite a contrast from the days of Turkey red which often took weeks and months.

The trend in dyestuff requirements leans strongly more and more towards the adoption of fast vat colors, not because the fabrics are required for a life time (neither the manufacturer nor the consumer would want that) but because in this day when cleanliness is next to Godliness these fabrics are required to stand either the laundry or cleaning processes without evidence of bleeding or fading etc.

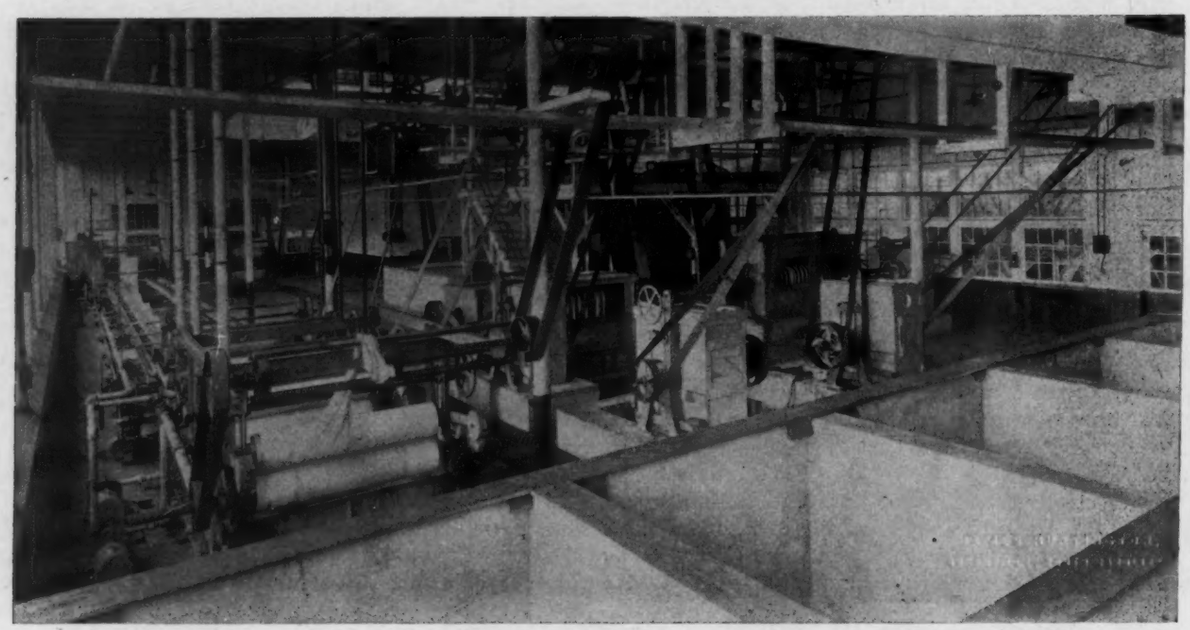
Finishing.

Fast vat colors are available in abundance but it is somewhat disappointing to the dyestuff manufacturer and dyer alike to know that their general adoption is being greatly retarded, the reason being that these colors cost only a few cents extra per yard and it takes only a few yards to make a garment. However, I see no reason why any merchant should be advancing the price by dollars instead of dimes and thereby leading the innocent and ignorant public to be suspicious of the dyer rather than the profiteer.

Finishing is the process through which piece-goods are passed in order to make them more pleasing to the eye, easier to market and more suitable for specific uses. Today we find this branch of the industry probably one of the most interesting departments in the textile trade and the *trends* in this end of the business are now advanced to where the finisher is part and parcel of the manufacture. Certainly such is the case on many of the newer fabrics where the finish chemically changes the construction of the fiber itself on goods like transparents, melts and metallic cloths. Finishing formulas used to read like so many cans of this, so many buckets of that and a dipper or two of something else, the sum total of which if examined by a competent chemist would look anything but scientific. It was, in the language of an old finisher whom I knew when a boy, a hit-and-miss proposition and very often resulted in re-runs. Today, thanks to the chemists and machinery builders alike, it is now possible to practically determine the mixing formula and finishing operation in a manner whereby positive results are practically assured, finishing the goods absolutely uniform with a saving of time and with a lesser cost than ever before.

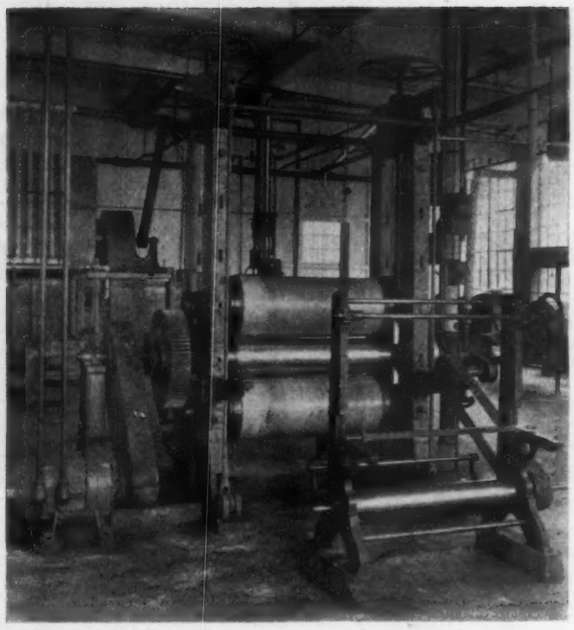
Speaking of bleaching, dyeing and finishing as a whole, I have noticed in addition to the materials employed, very interesting trends in processing equipment. We can all remember when practically all operations were conducted on individual machines. Then in line with the American idea of staples, and mass-production with minimum labor cost, the trend went towards the installation of continuous machinery and rightly so, but today, owing to novelties, small lots and the many changes involved, the trend seems to be swinging back toward the equipment of plants with individual units which are naturally more flexible.

Another *trend* in line with the American idea of



The plant views shown with this article were made in the new Gossett Dyeing & Finishing Company, at Anderson, S. C. The photograph above shows a general view of the bleach house. The mercerizing range is along the left wall, with rope washers and squeezers in the center, kier located directly behind the washer. In the left background is a three-roll water mangle, the concrete room to the right of the water mangle holding the singeing machine.

money making and cost cutting was the endeavor to accomplish a result by seeing how much could be *cut out* of a formula or the process. Today, however, I find lots of brainy men seeing how much they can *put in* providing the price will stand it and they are profiting by the sound reasoning that the man who furnishes a better result than his neighbor in some cases demand a premium while in other cases the better work will at least bring the business.



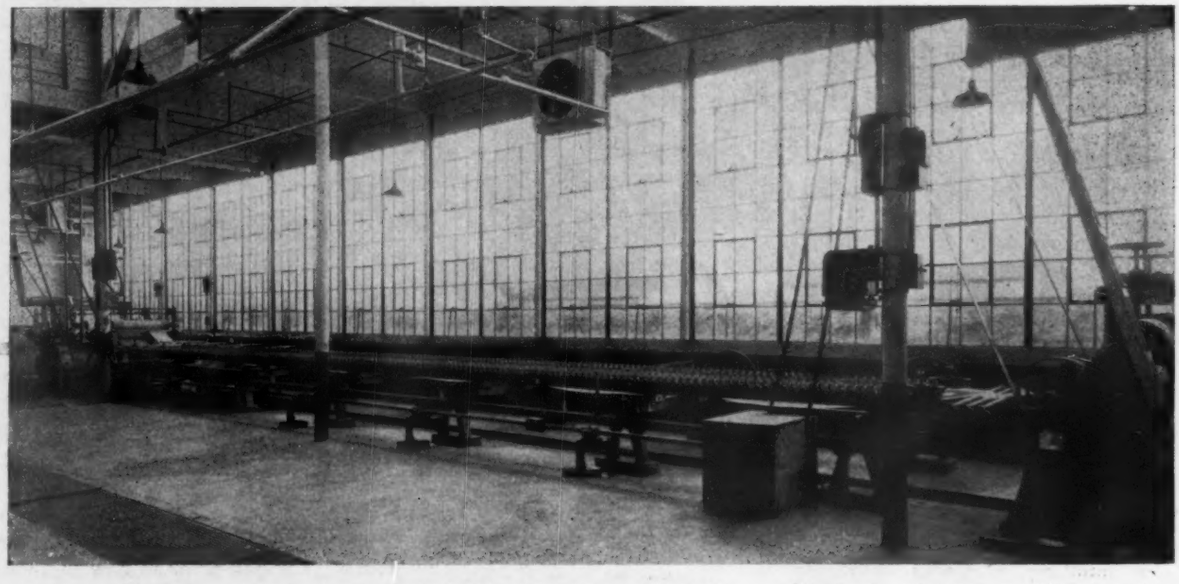
Three-roll calender erected in a five-roll housing, permitting addition of two rolls later on.

In all up to date plants the trend of the times calls for greatly increased efficiency. Chemists are analyzing the materials to be processed, testing the processing materials and originating formulas. Engineers are being employed for the upkeep of the machinery and the adoption of control systems, and the cost accountants are on the job looking after gains, losses and production. Each playing a part where in the older days such men were never dreamed of. It only takes a trip to any up to date money making concern to see the logic of this scientific trend, while on the other hand a short conversation with the man who has gone under soon reveals the fact that he was endeavoring to sail alone—truly false economy.

Research is Vital.

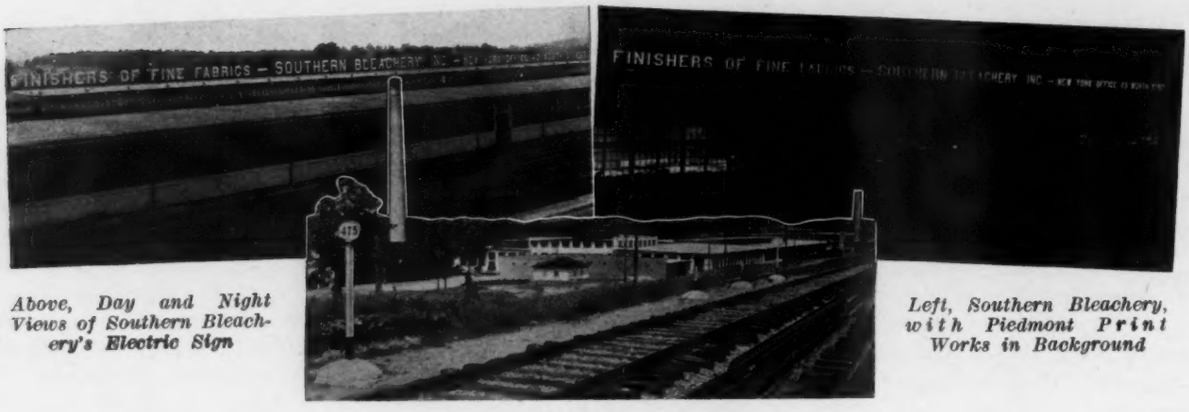
The trend of the times is calling for new fibers, new fabrics and new processes and right here we cannot lay too much stress on the trend toward research. They are making rapid strides in the "Old Country" in this direction, while we, living in the land of luxury, are content in a more or less degree and are allowing ourselves to become a nation of copyists. The United States has been built from a dissatisfied people, the population of which is represented by people who came over here striving for advancement and the descendants of such people. We only need a trip through the patent office to learn of the inventive genius now in this land, and if we are to be the leaders of the world's textile industry it is absolutely imperative that research be encouraged instead of as in the present day where the textile trade spends less money in research than in any other branch of industry.

In closing let me say that in dyeing, bleaching and finishing the trend has always been and is so today towards the elimination of secret processes. In fact, there are no secrets any more. Everything that has been done in the past is shown either in patents or in literature, but I do believe where one man can do a better job at a lower cost and make more profit than his competitor, well, that is a secret so far as he is concerned. There is an old saying that an expert is an ordinary man away from home, while a genius is the possessor of superior knowledge and be he either bleacher, dyer, finisher or student, the man who is striving for superior knowledge is evidently on the right *trend*.



Piece mercerizing range at Gossett plant. Showing pad tentering machine and wash boxes on delivery end.

The Finishing Industry *and* Its Development *in the* South



Above, Day and Night Views of Southern Bleachery's Electric Sign

Left, Southern Bleachery, with Piedmont Print Works in Background

By Harry R. Stephenson
President, Southern Bleachery, Sec.-Treas., Piedmont Print Works, Taylors, S. C.

A REVIEW of the textile industry is not complete without consideration of the bleaching, dyeing and printing plant which forms the connecting link between the cloth manufacturer and the consumer. This very essential operation has made rapid strides in the South in recent years. Just as the mills came to the cotton the bleacher, dyer and printer followed the mills until at this day the finishing interest occupies a prominent and commanding position in the southern economic structure.

In the beginning only the coarser grades were finished and the first plant was probably established in 1890. The pioneers were of course confronted with the many difficulties with which beginners usually meet; and there was a considerable interval before these handicaps were overcome. There was the hue and cry about the water being unsuitable and our eastern competitors were so successful with this line of attack that we were finally forced to guarantee our whites in much the same manner that colors are guaranteed today.

As our development proceeded and the time came for finishing finer goods, we were told that our labor was unsuitable for such work; also, that we were too far from the markets to compete successfully. These fallacies have now been completely exploded with a result that there are to-day in the South no less than one dozen commercial bleaching, dyeing and finishing plants who confine their efforts almost entirely to the handling of goods belonging to others. There are probably many more plants who only bleach goods belonging to themselves.

Mr. STEPHENSON

president of Southern Bleachery, and secretary of Piedmont Print Works, Taylors, S. C., has spent many years in the southern finishing industry, being one of the pioneers and a present leader in the field.

This development is particularly marked in the territory adjacent to Greenville, South Carolina, where railroad facilities for inward and outbound piece goods receives the preferred attention of the officials of the two lines serving this territory. Recognizing this saving in time and expense, eastern interests who for years have operated finishing plants in New England have already made large investments in the Piedmont section.

One of the prime objectives of the finishing industry is that of service, and therefore any successful development toward this end must be accompanied by a corresponding development in transportation facilities. The railroads of our section are fully alive to this necessity and, by making consistent delivery of our product to New York in four days, to St. Louis and Chicago in five days, have materially helped to make our business a success. An outstanding achievement is a record that has recently been made on 60,000 yards of cloth handled from a cotton mill located ninety miles from the bleachery, through that plant, bleached and dyed in three colors, and delivered to an interior Pennsylvania underwear factory in the remarkable time of eight days.

In recent years a demand has developed for mixed cotton and rayon goods. To keep up with this condition, the finishing plant has adopted new methods,

equipped with new machines, and generally stepped in line to handle an entirely new product. This venture has met with outstanding success in the South, and to-day not only goods of Southern manufacture but high grade fabrics of eastern make are being shipped from New England mills for finishing at our Piedmont plants.

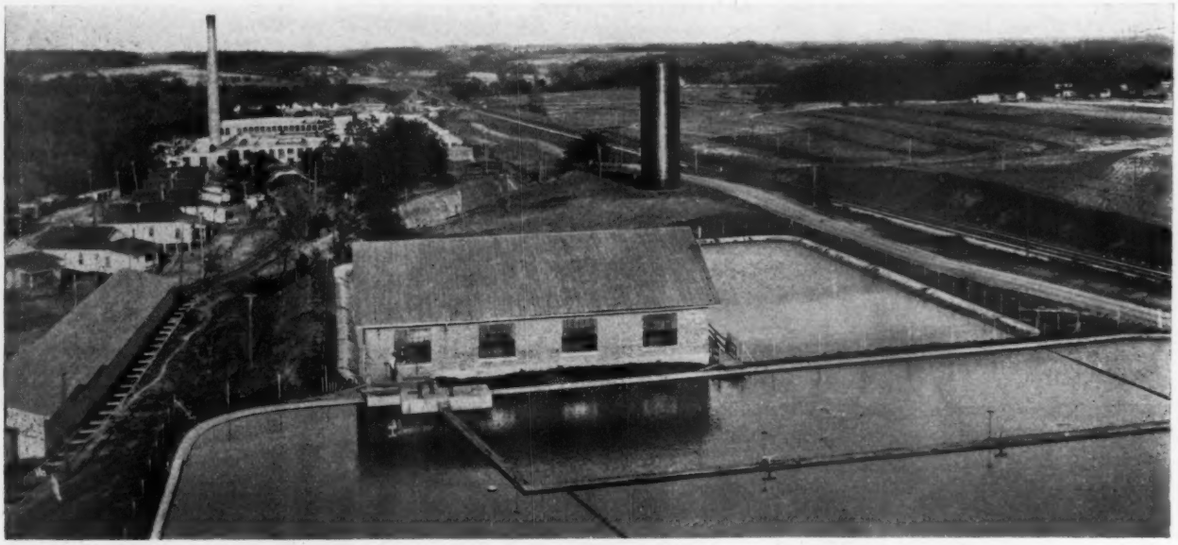
A modern layout is that of the Southern Bleachery, located at Taylors, ten miles north of Greenville, South Carolina, on the main line of the Southern Railway and the Piedmont & Northern. This plant, completed in 1927, embodies the very latest in textile finishing. Much of the machinery is of an entirely new pattern, manufactured in the organization's own machine shop for the new processes constantly being developed.

Chemical Control Laboratory at Southern Bleachery.

The successful development of the southern bleaching and dyeing industry, naturally, has served to attract the attention of the printers with a result that within the last year two commercial print works have been organized in the South. One of these, the Piedmont Print Works, sister plant of the Southern Bleachery and controlled by the same interests, is nearing completion and by the time this article is in print will be in full operation. This plant has been equipped with a view to handling such fabrics as shirtings, suitings, draperies and other goods manufactured in the Piedmont section which heretofore have been sent to the East for printing and, in many instances, brought back for the merchant's counter to practically the same point from which they started.

The Author's Career Has Been Intimately Associated with the Growth and Development of Finishing in the South. He tells Here the Story of that Trend. It Shows How the Southern Plants Have Gradually Progressed from Processing Only the Coarser Fabrics, to Handling a Diversified Line of High Grade and Intricate Fabrics.

No record of the finishing industry in the Piedmont section is complete without a tribute to the intelligence, good will and high character of the operatives. Originating from the hardy English, Scotch and Welsh stock that in the early days of our country settled in the Blue Ridge mountains the descendants are pure white, freeborn, healthy men and women who, to use an expression lately made by one of them, "Work with, not for, the Southern Bleachery." They show a feeling of loyalty, faithfulness and pride in the satisfactory accomplishment of their duties unexcelled by the employees of any industry. Such feeling has played no small part in the success of this particular enterprise. As in the manufacturing end, the personnel problem is materially minimized by the class of operatives available.



The Filter Plant, Daily Capacity 2,500,000 Gallons of Water.

RAYON, *the* Textile Prodigy, Shows Rapid Progress

By John Richardson
Crompton & Knowles Loom Works, Inc.

THIS discussion of Rayon and its use in the textile industry must be general – for developments in this fibre are surprisingly rapid and prevent detailed analysis. Likewise, it is intended that the generic term, Rayon, shall apply to the synthetic fibers under this general classification which retain distinctive identities but which fall under this general term in the trade's vocabulary.

Mr. Richardson emphasizes the application of these synthetic fibers in the weaving industry, specifically, but his discussion of the improvements made and the extended number of sizes will be applicable to the knitting and other branches of textiles in which Rayon is finding such extensive use.

AS THIS article is to appear in the January "Trends Issue," we must find some synonyms for the world so as not to overwork it. The dictionary gives us "tendency" and "inclination".

In nearly all phases of the silk and rayon developments in the year 1928 it has been more than a mere trend or an inclination, and in most cases the trend or inclination has had its inception before the opening of the year in question.

Take for instance the tendency of mills to go into the South—it has been a positive march. There has been a marked movement on the part of both cotton and silk weaving concerns to move themselves *in toto*, or to establish branch mills. In addition to these, there have been many mills started up with local capital, importing only their technical personnel and training men available locally.

Some of the New Problems.

In the main it has been a difficult and highly competitive year. The majority of those who have made money are those weaving novelties which "took" and those weaving staple goods on automatic looms. It would seem that as 1929 dawns many mill executives will have to decide whether they must put time and money into the development of a more adequate personnel in their sales, designing, and creative departments, or whether they should place their money and confidence in installations of automatic looms, which allow for the multiple loom system and a reduction in direct weaving costs.

Rayon has been a decided boon to the cotton mill as an ally of cotton, permitting a wider range of fabrics and a breaking away from the staple goods which are so competitive in view of the present over-balance of looms of certain types in this country.

The cold figures of production, consumption, and importation of rayon indicate a decided trend in the past year. In eight years the rayon *production* has risen from 9 million pounds to nearly 99 million pounds, with nearly 25 million pounds of that increase occurring in the year just past. Our *consumption* has been approximately 111 million pounds, leaving approximately 12 million pounds to be imported. It is significant to note that this is the first time our *imports* have decreased since we entered the rayon decade—from 16 million pounds in 1927 to approximately 12 million pounds for 1928. This means that our production is doing more than keeping step with our consumption to the end that we may eventually be manufacturing nearly all, if not all, of our rayon production.

The rayon figures under their three headings may be of interest:

	U. S. Production	Consumption	Imports
1920	9,000,000 lbs.	..... lbs.	1,848,000 lbs.
1921	18,000,000 "	21,667,000 "	3,672,000 "
1922	26,000,000 "	28,088,000 "	2,088,000 "
1923	35,000,000 "	38,906,000 "	3,912,000 "
1924	38,750,000 "	40,462,000 "	1,716,000 "
1925	52,200,000 "	59,201,000 "	6,996,000 "
1926	62,575,000 "	72,701,000 "	10,068,000 "
1927	75,050,000 "	91,272,000 "	16,212,000 "
1928 Est..	98,650,000 "	110,349,000 "	12,110,000 "

Mr. RICHARDSON

in his connection with Crompton & Knowles Loom Works, is intimately identified with the use of rayon in the textile field, and knows the problems there encountered, particularly in the weaving operation and preparation of the yarn for that process.

This year has witnessed a phenomenal advancement in rayon's popularity. As far as weaving is concerned, no longer is it used only in warp stripe effects or as filling in combination with cotton; nor is it limited to the highly competitive all-rayon voile. It is taking its place alongside of raw silk and it seems certain that before another year is out practically all of the raw silk fabrics will have their counterparts in rayon.

Great improvement has come about in both the wet and dry strength of rayon. Part of this improvement has been due to better raw material and the remainder to improved methods of manufacture. The year has seen rapid strides in the strength of all types of rayon, an increase in the number of filaments, and the manufacture of satisfactory low counts. Today it is possible to secure 75 denier yarn from practically all rayon makers. The lowest commercial deniers manufactured by the viscose process are 65; by the

AMERICAN COMMERCIAL RAYON YARNS GIVING DENIER AND FILAMENT NUMBER

DENIERS	35	40	45	50	55	60	65	75	80	85	90	100	110	120	125	130	140	150	160	170	175	180	200	240	250	300	360	450	600	900	1200	QUALITIES
I. Viscose Process								18				18			18			21		27			30		36	44		54	72			
The Viscose Company								30				40						24					60									A-B-C
																		36														
																		60														
Du Pont Rayon Co.							26		30			40			50			24		24			30			40		72	96	144		Regular A-B-C
																		60		60			80									Super-extra 1st-2nd
Industrial Rayon Corp.																		24								44						A-B-C and D
The Belamose Corporation												22						22					42			42		66	66	126	126	For 300 and below A-B-C-D & Inf.-SR
																		42														Above 300 I-II and SR
Acme Rayon Corp.																										44						A-B-C and D
Delaware Rayon Co.																		24								44		60	88	132	176	A-B-C
Skenandoa Rayon Corp.																		30														A-B-C
II. Nitro-Cell. Process																		24														A-B-C
Tubize Art. Silk Co. of America	8			12				18				20			25		30	30	30		30											A-B-C
												26																				
III. Acetate Process																																
Celanese Corp. of America			10		13			20				26						26		40			40			52						One only
								40										40														
																		80														
IV. Cupra-Amm. Process																																
American Bemberg Corp.		30				45			60			75		90				112				135		180		225	270	336	448			"A" and "M"
Napon Rayon Corp.												60		75				90														A-B-C

Revised November, 1928, by **JAMES W. COX, Jr., Consulting Textile Specialist, 320 Broadway, New York City**

In the accompanying article, Mr. Richardson discusses the increase in the number of filaments, and the manufacture of satisfactory low counts. The above table, revised as of November 1st, 1928, by James W. Cox, Jr., consulting textile specialist, shows the deniers and number of filaments available commercially from the American manufacturers, and will be of interest for reference purposes in connection with his remarks.

acetate process 45; by the cupramonium process 40; and by the nitrocellulose 35. The number of filaments has been increased so that today in practically all yarns the number closely approximates that to be found in raw silk.

Perhaps the matter of filaments should be made clearer. When the rayon is made the cellulose solution is forced out through something like a showerbath spray, which is called a "spinerette", and these little sprays of cellulose are filaments. The size of the yarn, therefore, depends on the size of the holes in the spinerette and the number of sprays of filament which are grouped together to form one strand.

A year ago a user of rayon had to be content to adapt his cloth to the available rayon yarns. Today the choice of rayons is somewhat bewildering and the user is in a quandary as to what type of rayon to buy. He must decide as to the process, the denier, the number of filaments, the lustre, and the grade, many of the manufacturers classifying their yarns in A, B and C grades, depending on the quality. Take the case of the 150 denier now on the market. There are full luster viscose process yarns with 18, 22, 24, 25, 30, 32, 36, 42, 60, and 75 filaments; dull luster viscose yarns of 24, 36, 60 and 75 filaments; cellulose acetate yarns of standard construction and 80 filaments; nitro-cellulose yarns of standard construction, and cupramonium yarns of 112 filaments.

Sooner or later, when more experience has been gained and more information disseminated, some of the present confusion will be eliminated, and users will know which, among a few yarns, are best for flat crepes of a certain construction and what are best for voiles of another construction, and so forth.

I said earlier that eventually nearly every raw silk construction will have its counterpart in rayon. That means that the bulk of the qualities will be made with hard twist filling to produce georgette, crepe de chine, flat crepe, and crepe back satin. These constructions, of course, will call for a 2x1 box loom so as to take the right and left-hand twist filling.

These tendencies are of marked interest to the loom manufacturers and they are already being felt. The silk weaving industry is gradually awakening to the possibility of making fine quality all-rayon goods which will compete profitably with all-silk constructions. With their 2x1 box looms permitting the silk weavers to make crepes they will have an advantageous position, and those concerns equipped with positive head motions are particularly fortunate as comparative tests have proven conclusively that this type of head or harness motion produces excellent quality all-rayon.

South Predominates in Rayon Manufacture.

Most of the construction of rayon yarn mills and of plants for processing and converting the yarn, has taken place south of the Mason-Dixon line. Hardly a day goes by that we do not read of some new rayon manufacturer breaking ground in a southern community. When statistics are available on the amount of money which has been invested this past year in rayon producing in the South, they will be startling. Also, it is believed that the South will lead the North in the consumption of rayon, as far as weaving is concerned. There can be but few cotton mills that have

(*Continued on page* 319.)

To Merge or *Not to* Merge

(Editor's Note—The following comment upon textile mill mergers is published because it presents, at least, some rather interesting angles upon the obverse side of the subject which is paramount in many executives' discussions at the present time.)

WHILE mergers are much talked of in the textile industry, apparently the leaders in the industry are not unanimous in their approval of them, either as a final efficient means of production or as a long time investment. One of the soundest economists and bankers stated recently that the fever for consolidations was being spread for two main reasons. One was that mergers may make it possible to put out of business some concerns that are being uneconomically operated, and to secure the advantages of large scale or mass production for the mills that survive. The other was that wherever changes in the capital structure of corporations are contemplated, an opportunity is afforded to insiders to make extra profits for themselves either at the expense of old shareholders or prospective new ones.

Trend of Recent Consolidations

Stock in the Loring mergers is being generally offered and those who are asked to buy are more forceful than they were concerning the possibilities of the success of new plans. Would it be better for mill shareholders to direct their management to employ the right kind of selling agencies and give them the proper sales cooperation, is being asked by many.

The mergers that are taking place in the retail business bid fair to force upon mills the problem of dealing with group buyers who command outlets for merchandise of certain kinds without guaranteeing the sort of national distribution that is wanted. Similar mergers are arising in the clothing industry.

Economies that are Promised

When consolidations can be made by an equitable interchange of stock, without special financing, it is obvious that they can bring economies in allotting orders, buying supplies, cotton, etc. This is not the form of consolidation that is making the most rapid progress. Where added capitalization per spindle is planned, economies planned may not be lasting. Any careful examination of some consolidations shows that the main consideration when individual plants are under discussion is the earning power, and not the economies to be pooled to better the operation of existing plants. It has been demonstrated time and again in the cotton industry that size alone does not guarantee dividends.

Mass Production in Cottons

Mass production is a thing no longer to be relied upon in the cotton mill business. Not so many years ago, southern sheeting mills operated on one or two constructions. Now a single mill may be employed on many constructions, even where yarn variations are not numerous—because the character of demand has changed. And the change in sheetings, a standard staple, is not a circumstance to the changes in other directions.

It was recently stated that five years ago there were 80,000 looms on ginghams; today hardly 15,000 are so employed and many of those on a thin profit margin or at a loss. Lack of available capital does not explain why such great gingham mills as the Amoskeag and Riverside and Dan River have not changed their machinery to other cloths, nor why they have not been enjoying the prosperity their power for mass production would seem to command.

Instability of Styles

Their condition and that of many other rich and well-equipped mills is due to the instability of styles in fabrics. When it is conceived that such standard fabrics as many sheetings and ginghams can go out of style, and men who have operated the plants successfully for a generation or more have found it difficult to readjust operations along profitable lines, what guarantee is there that a very sizable consolidation of other plants can be any better managed, or offer a more secure place for investment. A few years ago combed yarn mills were among the most profitable. Today many are finding things difficult. The automobile trade used combed yarns for several years, and then switched to carded yarns, leaving many beautifully equipped combed yarn mills without a market.

Can the consolidations dominate the markets? In some present combinations this power does not exist. Whenever large textile plants attempt to dominate markets by the power of their production, two forms of resistance develop. One comes from the buyers, who dislike domination even when price cutting is not a penalty on them, and the other arises from the ability of small and well-managed units to meet competition and make the price basis for the larger fellow.

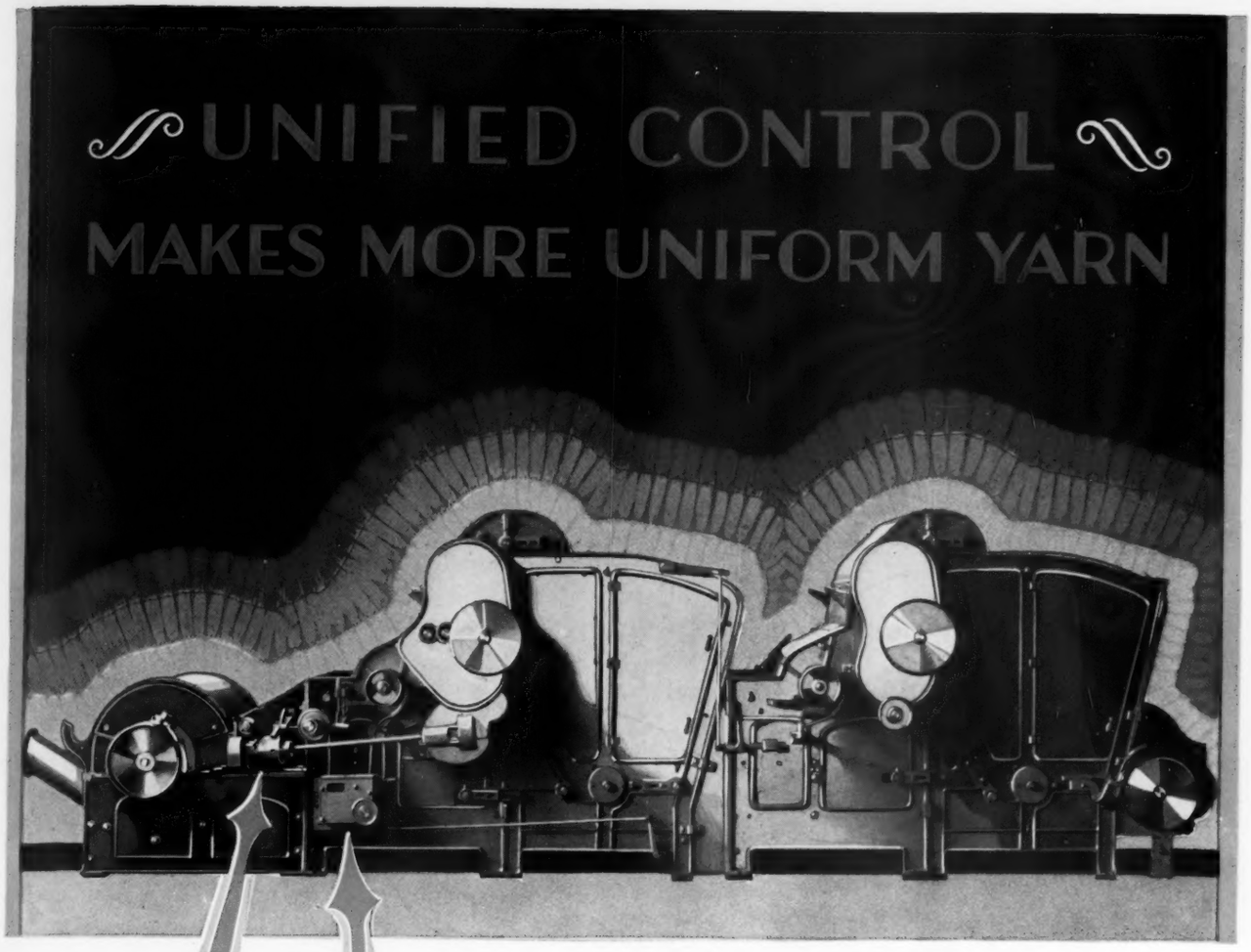
Mr. Lee Discusses Mergers

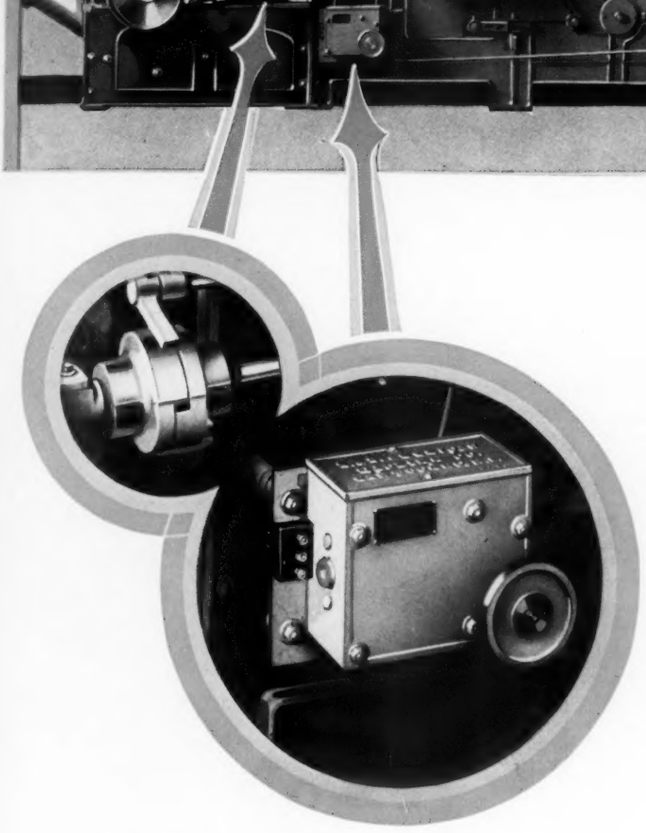
Speaking before the annual dinner of the Association of Cotton Textile Merchants of New York, recently, W. S. Lee, of Charlotte, N. C., vice-president and chief engineer of the Duke Power Company, said in part:

"* * * There are too many selling organizations; there are too many manufacturing organizations. Some of these organizations should be merged in the interest of efficiency, economy and the proper handling of products. Perhaps not merged as manufacturing plants and selling agents, but they should be coordinated so that the selling organization is just as much a part of the manufacturing as if it were the same company. * * *

"I do not believe that great mergers should be formed for the sole purpose of making easy profits for the organization. I mean that they should be put together or closely coordinated for the purpose of stabilizing the industry. ..It is just as disastrous to the industry to get the price too high as it is to get it too low. Waves of high prices cause the building of many new plants and this, after depression comes, causes many problems to be borne, in the ultimate end, by the consumers."

UNIFIED CONTROL MAKES MORE UNIFORM YARN





THE making of uniform yarn demands uniform laps. To produce a lap regular in weight per unit area of, say, one square foot, accurate feed regulation of both length and width must be maintained in every preparatory process.

The H & B Magnetic Clutch controller, combined with the T. S. R. Stop Motion, insures absolute feed control and eliminates all possibility of damage from the admission of foreign substances.

Police your Pickers, reduce your labor costs, and increase your quality with H & B Unified Control.

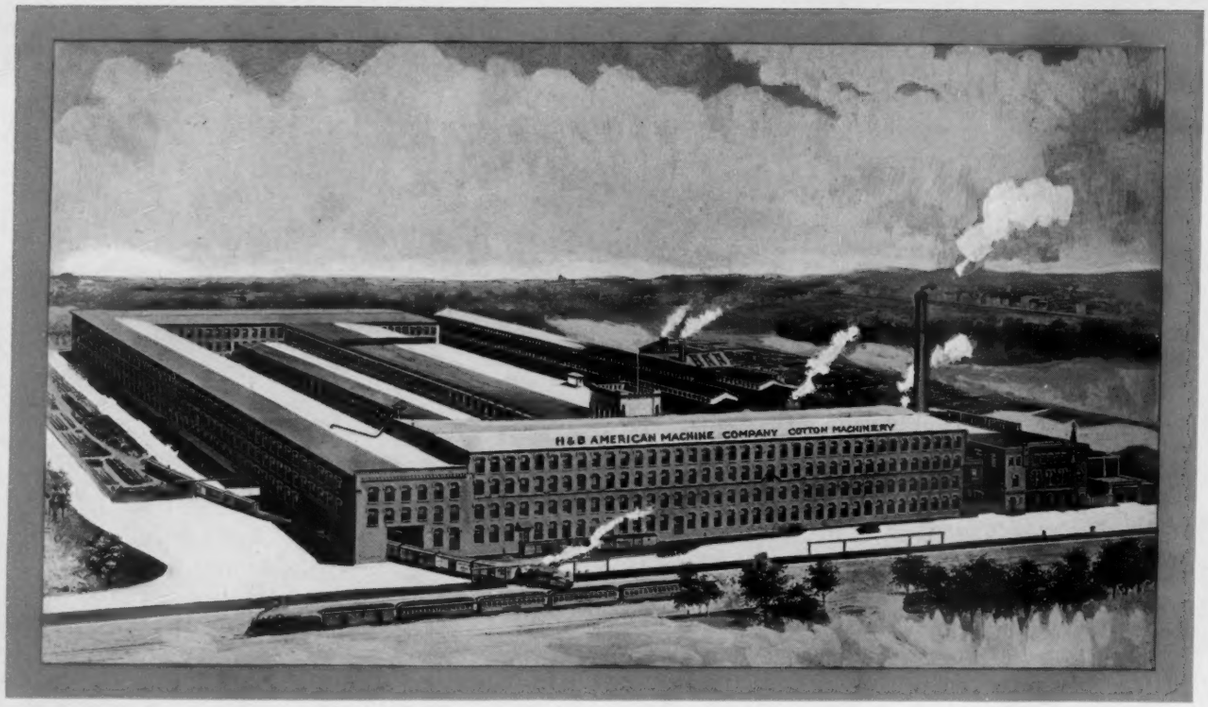
Performance facts gladly furnished upon request.

H & B AMERICAN MACHINE CO.

PAWTUCKET, R. I.

Southern Office: 814-816 ATLANTA TRUST CO. BLDG., ATLANTA, GA.

BUILDERS OF COTTON PREPARATORY AND SPINNING MACHINERY



WHAT H & B EXPERIENCE IN SOLVING COTTON PROCESSING PROBLEMS MEANS TO YOU

WHEN you buy a machine made by this organization, you get more than metal—more than a piece of machinery. You get a device that has been perfected for performing a particular operation, one that has back of it the combined experience of engineers who have spent their lives developing cotton preparatory and spinning machinery.

Our creed is "not how cheap but how good can we build H & B Machinery." Every machine reflects this ideal. We are proud of our long association with the Textile Industry and the reputation we have achieved for the quality of our products.

We are always ready to help solve your cotton processing problems.

H & B PREPARATORY AND SPINNING MACHINERY

HOPPER BALE OPENERS · CRIGHTON OPENERS · EXHAUST OPENERS BUCKLEY OPENERS · ROVING WASTE OPENERS · SELF FEEDING OPENERS FEEDERS · COTTON CONVEYING SYSTEMS · INTERMEDIATE AND FINISHER LAPPERS · REVOLVING FLAT CARDS · DRAWING FRAMES (WITH MECHANICAL OR ELECTRIC STOP MOTION) · SLUBBING—INTERMEDIATE AND ROVING FRAMES · SPINNING FRAMES AND TWISTERS—(BAND OR TAPE DRIVEN) SPINDLES—FLYERS—RINGS—FLUTED ROLLS

H & B AMERICAN MACHINE CO., PAWTUCKET, R. I.

Printed in U. S. A.

CURRENT TOPICS

Buzzes Around King Cotton's Throne

THERE is much discussion—as always of a new curiosity—of a plant being grown in England this year as a "substitute" for cotton. It is stated that four to five million pounds of spinnable fiber, producable at a cost of 10 to 12 cents a pound, will be harvested there this season. The development is hailed by the hasty as a serious threat to cotton's supremacy as a textile. Reports so far, however, are too vague and general for definite findings to be justified. It seems that the plant was discovered in British Guiana, one of the warmest of tropical lands, yet it indicates a willingness to make itself thoroughly at home in as northerly a latitude as that of the British Isles. It probably is something like abaca, or Philippine hemp, which has never been produced extensively outside of our islands of the Far East. Abaca fiber often has been thought of for use as a textile and is so used in limited extent in the Philippines. But no one ever has thought of it seriously as a threat to cotton, though it can be produced in unlimited quantities at a cost permitting it to be delivered in Liverpool or New York at a price of five to six cents a pound.

The figures 4,000,000 to 5,000,000, covering the estimated number of pounds of the new textile being produced in England this year, probably account for some of the seriousness given to it in comments on this "substitute" for cotton. The figures look big; even if correct, however, they bespeak the equivalent of only about 8,000 bales of cotton. This would provide material for British mills, on full running time, for perhaps a half day's operations.

The foregoing comparison illustrates the extent of productive development any "substitute" must attain before being a serious competitor of cotton as a textile. The estimated current production of the newly cultivated fiber would have to be multiplied a million or so for the new "substitute" thus to become formidable to cotton. It is somewhat like developing a substitute for brick; it no doubt can be done but not with any wide-scale advantage.

It is a curious fact that, for more than a hundred years, cotton is one great staple product of the soil that has had virtually no competitor. Rubber is in a similar class—but rubber has defied competition by cheapness almost alone. Synthetic rubber can be made from many products, even ones of the cotton plant; and, even in the flora of this country there are numerous plants—the milk-weed for one—which yield substances that might be turned into real rubber.

But, unless rayon be such, synthetic cotton is virtually unknown even in the experimental laboratory, though there are chemists who say that it won't be long before cheap synthetic cotton can be procured from wood. Non-synthetic competitors have been practically negligible in the quantity sense. As mankind turns from the pastoral manner of life, wool tends to recede as a textile. Silk is likely always to be too costly, and its range of advantageous use too limited, to threaten cotton's supremacy. Linen may prove to be a dangerous rival in case a cheap and easy way is ever found for getting the textile in good form from flax straw, which can be produced more cheaply than cotton.

In judging candidates for place with cotton in the world of textile consumption, the many products derived from the cotton plant should not be forgotten. The contents of its seed make the cotton an important food plant, which, at the same time, yields materials for innumerable other uses. Moreover, cotton as a textile has a wider range of use than any other fiber—perhaps wider than that of all others in the textile group.

It is curious—and unfortunate—that a connotation of cheapness, in the sense of commonness, attaches to cotton as a textile in the minds of many folk. In some of its fabricated incarnations, cotton is more exquisite than any other textile. It is on the whole more exquisite than any other textile. It is on the whole more intrinsically admirable than any other. Cotton's just right to the highest standing in society should be hammered into the world's mind. It has suffered from the comparatively low selling prices of most of its products and these low selling prices have in no sense owed to the rivalry of "substitutes", or rife competition from other materials.

Cotton still is king in more ways than one; its truly royal attributes should be made better known.

Until recent years, practically no efforts of a concerted nature had been made to exploit cotton for its true worth. The present campaigns of new and extended uses are most worthwhile, and should receive whole-hearted support.

The Cotton Plant

By Henry W. Grady

WHAT a royal plant it is! The world waits in attendance on its growth. The shower that falls whispering on its leaves is heard around the earth. The sun that shines on it is tempered by the prayers of all people. The frost that chills it and the dew that rescends from the stars is noted, and the trespass of a little worm on its green leaf is more to England than the advance of the Russian army on her Asian outposts.

It is gold from the instant it puts forth its tiny shoot. Its fiber is current in every bank, and when loosing its fleece to the sun, it floats a banner that glorifies the field of the humble farmer; that man is marchalled under a flag that will compel the allegiance of the world, and wring tribute from every nation on earth. It is the heritage that God gave to this people forever as their own when He arched our skies, established our mountains, girt us about with the ocean, loosed the breezes, tempered the sunshine and measured the rain.

Ours and our children's forever! As princely a talent as ever came from His hand to mortal stewardship.

Tariff Revising Begins

CONGRESS has entered upon the recurring task of tariff revision. Hearings before the House's ways and means committee have been scheduled with the view of a special session of the 70th Congress in the Summer or Fall. Unless something causes a postponement, business and industry will be beset during most of 1929 by the uncertainties attending changes in customs duties. The period of suspense may go beyond this year. It took Congress about a year and a half to frame the present tariff act, and the subject is more complex now than ever before.

There is no compelling reason for general tariff revision. It is being undertaken rather automatically. In general, hitherto, it has been customary to revise the tariff every ten years or so. Before the new act becomes effective, the present law will have been in operation about eight years. Members of Congress who have to do with it directly like to revise the tariff, despite the hard work put on them by the task. Congress is rarely more in the limelight, leaders therein are never more powerful, than when framing new tariff schedules. For then they measurably hold the fate of most industries in their hands. Names attached to tariff acts invariably have fixed places in history. Another reason why Congress is taking up the tariff in the fact that, until that subject is out of the way again, little can be done about several other problems of importance.

Tariff revising this time probably will affect business less than at other times in the past. The last revising did not much disturb affairs, which were beyond great disturbance as the post-war depression had done about all that could be done.

The raising of rates in 1922 probably checked the dumping of cheap goods from disrupted Europe and possibly shortened the post-war depression in this country. The so-called flexible provisions of the 1922 act have not proved highly practicable. On applications for changes in rates, the Tariff Commission has been about as political as Congress—and has moved much more slowly in most cases. Only a small number of rates have been passed on by the commission.

Whether "flexibility" shall be retained is a big question to be decided in connection with the new revision by Congress. The Tariff Commission no doubt will be retained in some form—as it is not easy to get rid of bodies of that kind. It is much easier to reduce them to a status of innocuous desuetude, as may be done in this instance by letting the commission revert to its original character of a purely investigatory body.

What will Congress do about rates? The outlook is that duties will be raised all along the line or, possibly, in lieu of an unprecedented heightening, a horizontal lowering. The situation's atmosphere at the beginning of the revising work is almost wholly sky-high protectionist. Those presuming to speak for agriculture are going to make the sky the limit as to duties demanded for the protection of farm products. Some of them talk about widening the margin of protection between farm and other products. In the end, however, farm spokesmen are apt to concede everything asked for by others in return for all they demand. These demands will go beyond mere tariffs, unless prior steps are taken to make duties effective on farm products. Valorization will be mixed up with this tariff fight.

The prevailing point of view apparently is that this tariff revision should have regard only for produced articles. Even the raw materials phase of consumption is in probably for hard sledding. Many raised rates on finished products may be made ineffective by heightened ones on raw materials.

Sectional considerations will be involved in the affair as never before. The same kind of domestic industry needs protection in some localities while having no need of it in others. Carrying costs often will be a bigger item of consideration than production costs.

The outside world will take more interest in this revising than it took in any preceding one. Foreign interests and even governments will be as energetic in the matter as domestic groups. The American is the biggest, richest and fastest growing of the world's markets. The present tariff act provides for investigations abroad anent our tariffs. If we can demand the right to send agents into foreign factories, the owners of those factories have as much right to express themselves directly about our customs duties. Some foreign governments won't hesitate to speak out very frankly on the subject, as that of Argentina has done regarding some Tariff Commission cases.

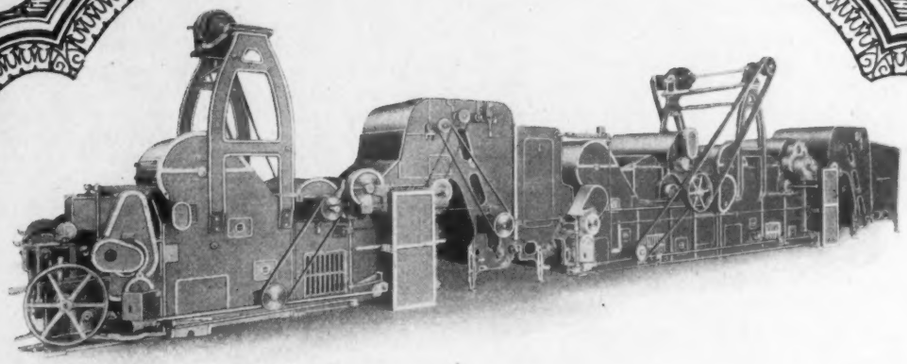
The foreign trade factor is more ponderous than ever before; it may cause several industries, hitherto protectionist, to be moderate in their demands. Some may verge towards free trade.

It is probable that American business and industry is more independent of the tariff, or of the uncertainties that attend general revision, than ever before. If this be so, no noteworthy retardation of activity will occur on that account while the revising is on.

Mills Aid in Developing Better Cotton

A CONTRIBUTION of $1,000 was recently voted unanimously by the Cotton Manufacturers' Association of Georgia, to be made to the State College of Agriculture to aid in the 1929 "More and Better Cotton Contest" of that institution. This is the third successive year that this contribution has been made by the Association. The money will be used in the contest for cash awards upon the basis of the staple and character of the cotton grown, a stipulation added, by the manufacturers' request, to the requirements of yield and cost of production per acre.

An investigation in 1927 showed that the Georgia mills were purchasing more than fifty per cent of their cotton outside of the state, because Georgia-grown cotton generally would not meet the spinning requirements of Georgia mills. Another survey showed the number of bales of each grade and staple used by the mills of the state, and tests of the Department of Agriculture proved that the majority of this cotton could be grown profitably by the farmers of the state. To encourage the Georgia farmers to grow the cotton suitable for the mills' requirements, the manufacturers are contributing this effort toward creating condi-



SACO-LOWELL ONE-PROCESS PICKER

(with Synchronized Control)

Now Operating Extensively in both Northern and Southern Mills

ANOTHER triumph for SACO-LOWELL engineers. This one-process Lapper, designed especially for American mills, has been successful beyond the hope and expectations of its designers. It is a totally new Lapper and has been thoroughly tried out under practical mill conditions.

Its first and foremost advantage, the saving of labor, has been proven beyond a doubt. There is no handling of the cotton from the time it is fed to the Bale Breaker until the lap is removed from the calender ready for the Card-Room. Its efficiency is unexcelled.

On every installation, both North and South, our One-Process Picker with synchronized control, has given better results than were being obtained on the two or three process system, as regards cleaning, appearance of lap, and evenness yard for yard, and lap for lap.

Facts, figures, specifications, and organizations of Saco-Lowell one-process Picking in successful mills are now available. May we place them in your hands? Call on any Saco-Lowell representative.

Counting those already in operation and those orders now on our books, we have sold over fifty of these One Process Pickers. Among the mills installing this machine are:

THE ANNISTON MFG. COMPANY
LANGLEY MILLS
PACIFIC MILLS
BOOTT MILLS
CHICOPEE MFG. COMPANY
LANETT MILLS
ALICE MFG. COMPANY
OCONEE MILLS
ROXBORO COTTON MILLS
ATHENS MFG. COMPANY
EXETER MFG. COMPANY
DANA WARP MILLS
BRANDON MILLS
BERKSHIRE COTTON MILLS
NINETY-SIX COTTON MILLS
GREENWOOD COTTON MILLS
SAXON MILLS
ARAGON-BALDWIN COTTON MILLS
ROANOKE MILLS COMPANY

SACO-LOWELL

MANUFACTURERS OF TEXTILE MACHINERY

147 Milk Street, BOSTON, MASS.

CHARLOTTE, N. C. GREENVILLE, S. C. ATLANTA, GA.

tions which obviously would be advantageous to both grower and user.

In addition to this cooperative effort, many mills are individually distributing among the farmers of their communities carload lots of high-grade seed, resulting in a growing demand for these seed. Entire communities of farmers are growing cotton suitable for the requirements of neighboring mills, selling the cotton and the seed direct to these mills, being paid an extra premium to which the extra staple and grade entitles them. At least one mill is conducting several experimental farms, in an effort to determine the best variety of cotton that can be grown in its community and which will be suitable for that mill. A large mill group has devised a plan whereby the farmers in a large surrounding section pool their extra staple cotton and sell it all at one time to these mills. They receive an extra premium on this cotton by selling direct to the mill and the mill saves the freight from far distant points.

What the Southern Mills are Doing

THE Bemis Bros. Bag Co. mill at Talladega, Ala., will have 32,000 spindles and 700 looms. Dimensions of the buildings are as follows: main building, two-story, 143 x 638 feet; warehouse, one-story, 100 x 800 feet; weave shed, one story and basement, 143 x 660 feet; picker room, two-story, 81 x 177 feet; power house, 48 x 48 feet. J. E. Sirrine & Co., Greenville, S. C., are the engineers.

The Smallman Construction Company, Birmingham, Ala., has been awarded the contract for the construction of the main building of the new braid mill of the Alabama Braid Corporation, Gadsden, Ala. The main building will be one-story with saw tooth roof and will be 150 x 326 feet. The company will manufacture braid, cord and ribbon from silk, rayon, hemp, cotton, wool and hair yarns.

Machinery is being installed in the two units of the Saratoga Victory Mills, Albertville and Guntersville, Ala., and it is expected that production will begin in February.

Micolas Cotton Mills, Opp, Ala., is installing 48 40-inch automatic looms and two beamers.

It is reported that the American Chatillon Corporation, Rome, Ga., is issuing plans for the construction of 200 houses for the employes of the mill and 150 for the managers, engineers and foremen.

The Martha Mill, Thomaston, Ga., has been acquired by th B. F. Goodrich Rubber Company, Akron, Ohio. It is reported that the company plans to enlarge the mill to 100,000 spindles. A. T. Matthews will be the agent.

Work on the addition to the Echota Cotton Mills, Calhoun, Ga., is almost completed. New Spindles will be added, increasing the capacity of the mill about one-third.

Carolina Cotton & Woolen Mills Company, Leaksville, N. C., has begun work on the new extension to one of the mills. The new building will be three-stories high, of brick and concrete construction. There is also under construction at these mills an addition to the new weave room, a new machine shop, boiler house addition and concrete reservoir.

Work has been completed on the warping and spooling room at the Rankin Mills, Inc., Gastonia, N. C., to provide for new machinery. The winders will be taken out and sold and in their place a number of new twisters will be installed. Some new spoolers also will be placed in this new addition.

The Spencer Corp., Spindale, N. C., and the Spindale Mills Co., Spindale, N. C., have been consolidated into a new company to be known as the Spencer Corporation. The company plans to build a new weave shed and add 200 looms.

The Proximity Manufacturing Company, Greensboro, N. C., has adopted brick houses for its employees, it has been announced. Forty houses will be erected immediately, the first of a 600 house building program.

Immediate construction of additions to the Beacon Manufacturing Company, Swannanoa, N. C., are planned which will increase the capacity about 50 per cent. No new equipment will be purchased as machinery, including looms, carding, spinning and finishing equipment, will be shipped from the New Bedford, Mass., plant of the company.

The Hanover, Pinkney and Rankin Mills, Gastonia, N. C., have been combined under the same management and are to be known as the Hanover Mills, Inc.

Sale of the Troy Cotton Mills, Troy, N. C., to the Wilbur Cotton Mills, Inc., New York, has been officially announced. It is reported that the company plans to add a 10,000-spindle unit in the near future.

Southeastern Bleach and Dye Works, Inc., Salisbury, N. C., is installing equipment to double production. Equipment includes two long chain warp dyeing machines, a warp printing machine, beamers and quillers and additional Foster high speed winders.

The addition to the Pickett Mill, High Point, N. C., will soon be completed and 24 new cards will be installed.

As a further step toward concentrating its organization on the 2,100 acre site acquired by the American Enka Corporation outside of Asheville, N. C., the company has recently moved its offices to that center from 114 East 32nd Street, New York. The foundations for the plant have been completed and enough steel for a plant to give the company an initial production of 17,600 pounds daily is being erected. The program now calls for the beginning of production next Fall.

The Spencer Corporation, Spindale, N. C., has let contract for the construction of an addition to the weave shed to be 125 x 140 feet, 200 looms will be installed. Potter & Shackelford, Greenville, S. C., have the contract. Twenty cottages will be erected for the new operatives required to operate this additional equipment.

The new mill of the Lund Company, Inc., Rock Hill, S. C., will be placed in operation with 14 looms, according to A. P. Duchesneau, resident manager, who states that brocaded rayon and cotton drapery will be manufactured initially.

Yarns Corporation of America, Spartanburg, S. C., has let contract to McBurney Stoker and Equipment Co., Atlanta, Ga., for guyed steel smokestack, boiler and brick setting for the mill, Lockwood, Greene, Engineers, Inc., Spartanburg, S. C., engineers.

The second unit of the Hartsville Bleaching & Dye Works, Hartsville, S. C., is being rapidly completed, and when finished will house the print machinery and equipment.

Through the office of Lockwood, Greene Engineers, Inc., Charlotte, N. C., contract for vacuum heating system for the Joanna Cotton Mills, Goldville, S. C., has been let to the Poe Piping & Heating Co., Greenville, S. C. This system is to be installed in the new mill building now under construction.

The Jenkins Mill, Batesville, S. C., along with seventeen employees' houses, two warehouses and forty acres of land was purchased by Louis Thomas, Greenville, S. C.

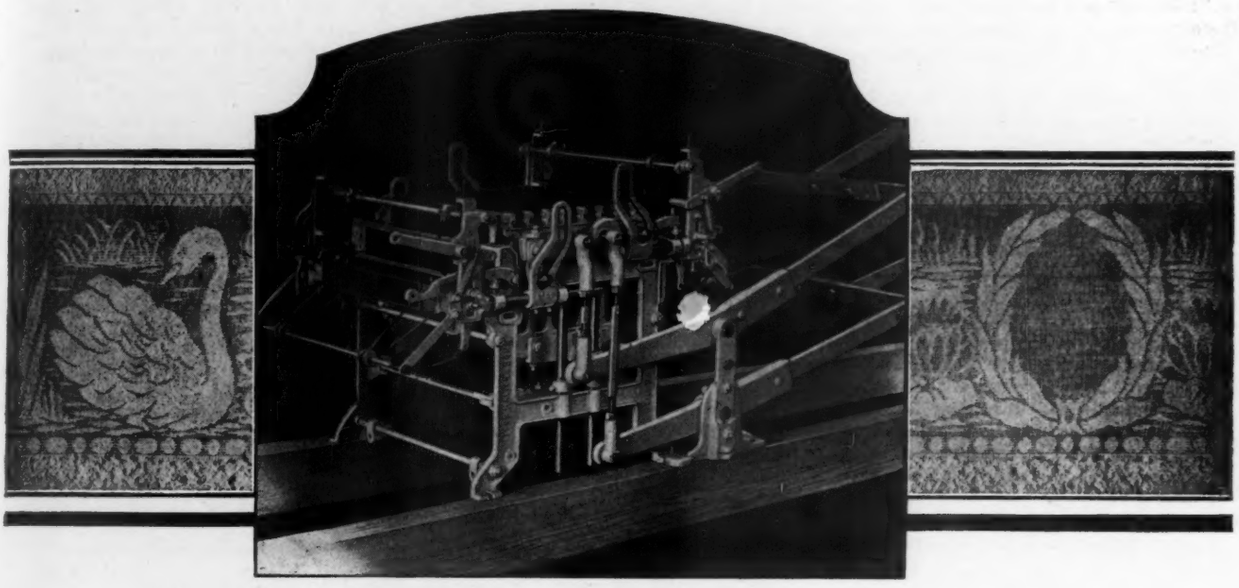
The Oconee Mills Company, Westminster, S. C., is installing new machinery in the card room and is equipping the carding and spinning departments with steam heat.

The Fiske-Carter Construction Company, Spartanburg, S. C., has been awarded the contract for the construction of a $30,000 mercantile establishment at the Arcadia Mills Spartanburg, S. C.

Construction has been started on the addition to the Southern Weaving Company, Greenville, S. C., which will house 28 looms when completed. Gallivan Building Company, Greenville, S. C., has the contract.

Kendall Mills, Edgefield, S. C., will build 38 new houses so as to provide homes for a night force.

The Welwood Silk Mills, Inc., Winchester, Tenn., will move broad silk looms to Winchester and install them in a vacant building when the structure has been enlarged. Machinery has begun operation in the company's plant at McMinnville, Tenn., and contract has been let for the silk weav-



Towel Manufacturers Use This Halton Jacquard

Some of the Towel Mills where Halton's Jacquards are giving Satisfaction in performance and durability.

Somerset Mills
W. H. & E. A. Margerison Co.
Glen Riddle Mills
Ward-Davidson Co.
John Watt's Sons Co.
Nelson Kershaw Co.

TOWEL Manufacturers keep pace with the demand by using Halton's 400 Double Cylinder Jacquard machine.

This model, complete with the most up-to-date Jacquard equipment, can be run at any speed and can keep pace with the fastest automatic loom. It is also used for upholstery or any kind of cotton goods which require designs. The 600 is also suitable for this type of work.

Every Halton Jacquard is manufactured to render superior performance and to allow intricacy of design. Wherever COTTON, WOOL, or SILK manufacturers desire the best in Jacquards, they turn to Thomas Halton's Sons. Past performance guarantees future satisfaction.

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• A HALTON JACQUARD FOR EVERY DESIGN AND PURPOSE •

ing mill at Sparta, Tenn.

Installation of machinery in the second unit of the American Bemberg Corp., Elizabethton, Tenn., is progressing rapidly. Full production will probably be reached early in the summer.

The American Finishing Company, Memphis, Tenn., is reported planning to increase production and will install equipment for mercerizing and vat dye work.

COTTON COMMENT

By H. & B. Beer--

New Orleans, December 15th, 1928

SINCE our review of one month ago the trend of the cotton market was generally to a higher level until near the close of November when the peak of the upward movement was reached. Realizing followed because of the uncertainty attending the government's annual December cotton crop estimate, released December 8th, which occasioned a further sharp decline, representing a shrinkage in values of nearly $7.00 per bale compared with the late November "high."

Upon reflection it was realized that the increase in the indicated crop, November 1st, to December 1st, was only 240,000 bales or less than one week's world consumption of American. Furthermore, the estimated crop was figured in bales of 500 pounds gross weight, making it possible for final ginnings to show less than the prediction for a yield of 14,373,000 bales. Last year, the crop, figured in bales of 500 pounds gross weight, was 12,956,000 bales, whereas the season's ginnings, counting round as half bales, totaled only 12,783,000.

The real cause for the late sharp recovery in the market, values today, showing an advance of about $3.00 per bale from the recent low price level, was the astonishing bullish monthly cotton textile report of the Association of Cotton Textile Merchants of New York, which revived ideas as to the probability of a large consumption of American cotton by the world this season, private estimates ranging from about 14,900,000 to 15,400,000, or much in excess of the indicated yield. Linters are omitted in both instances. By a strange coincidence the recent recovery in the market represents a like advance in values compared with one month ago.

REPORT OF THE ASSOCIATION OF COTTON TEXTILE MERCHANTS OF NEW YORK.

November Yards—	This Year	Last Year
Production	341,841,000	321,621,000
Sales	375,163,000	193,871,000
Shipments	347,949,000	286,097,000
Stocks	388,634,000	292,535,000
Unfilled Orders	519,770,000	340,221,000

The British Board of Trade report for November, however, was rather disappointing, considering the recent more favorable trade advices from Manchester, but it will be recalled that of late Manchester has been laying stress on the improvement in the home demand, which improvement may more than offset the falling off in exports; and it is possible that exports of goods may pick up in the future.

CENSUS REPORT

United States— Bales—	This Season	Last Season
Consumption, lint, November	610,884	626,742
Consumption, linters, November	68,569	63,938
Consumption, inc. linters, November	679,453	690,680
Consumption, lint 4 months	2,248,622	2,502,566
Consumption, 4 months, linters	281,389	295,843
Consumption, inc. linters, 4 months	2,530,011	2,798,409
Mill stocks, November 30th	1,566,878	1,551,776
Stocks in public storage Nov. 30th	5,252,843	5,973,958
Stocks in mills and pub. stg. Nov. 30th	6,819,721	7,525,734
Active spindles during November	30,596,840	32,314,114

While November consumption was a little less than generally expected, it was close to last year's record for November, and would probably have been larger were it not for the numerous holidays including presidential election day which may have been observed in some of the cotton mill states. The increase in mill stocks during November of 371,917 bales against an increase of 228,073 bales during the corresponding month last year was looked upon as anything but a bullish feature, but it is possible that spinners may be stocking up for probable good business ahead. At any rate mill stocks are only about the same as they were one year ago, while business is improving now, whereas after this time last year, so far as the cotton mills are concerned, it fell off, which conditions will likely be reflected in next month's returns. Moreover, stocks in public storage at the close of November were, as noted above, much smaller than last year.

BRITISH BOARD OF TRADE REPORT FOR NOVEMBER

	This Year	Last Year
Exports of yarn, pounds	15,000,000	17,000,000
Exports of cloth, yards	331,000,000	402,000,000

Exports from the United States, to December 14th, were 4,214,000 bales against 3,492,000 to corresponding date last season, and are running on a basis, compared with last season, of 8,552,000 bales. Last season exports from the United States were 7,830,000 bales. Prospects are for the probability of the present excess in exports over last year expanding as the season advances.

Compared with last season, the world's visible of American cotton yesterday was 6,220,000 bales against 6,517,000, of other kinds 1,750,000 against 1,367,000 and of all kinds 7,970,000 against 7,884,000.

New England Mill Situation.

Competition on Fancy and Novelty Merchandise—a Serious Problem

December 15th, 1928.

THE liquidation of New England mills is proceeding slowly and there are many indications that the second hand machinery markets are glutted. It is becoming obvious to those who are bent on establishing new mills in the South to take advantage of local investments, low wages, taxes, and freedom from legislative restrictions, that something more is required to insure the profitable operation of mills. In times of hard competition poor or second grade machinery is a decided handicap against mills economically handled and goods well sold.

The city of Fall River has reduced the taxes due from the Arkwright mills, a 60,000-spindle plant that has been idle because banks refuse to loan more money to the managers and it is hoped that compromises with other creditors can be arranged so that the property may be absorbed in the Loring merger at about $3 per spindle. If this can be accomplished the stockholders will get nothing, but the new owners will put in enough money to produce goods on double shift time, which is permissible under Massachusetts laws when women or children are not employed at night.

Fall River Plants.

A committee of the stockholders of the American Linen Company, another large print cloth plant, reported that it may be possible to secure reductions of Federal and local taxes due. If this can be done an effort will be made to arrive at a compromise with the bank creditors and then re-start the plant, also on double shift schedules. Similar action is also proposed for the Osborn and Chase mills, either of which could be made profitable in ordinary times if capital to the extent of $500,000 can be secured.

Much of the machinery in these plants is above the average in quality for print cloth yarn production but without more quick capital to reduce bank indebtedness and command further financial assistance the work of liquidating will drag on. No one seems to want to put the mills into bankruptcy.

It has been announced that there is a prospect that the York mills of Saco, Me., and the Great Falls mills of New Hampshire may be sold to power interests who may find

(*Continued on page* 321.)

Pressure Lubrication Involves more than this Now-a-days!

Pressure lubrication, in the old days, meant giving a few turns to the caps of the grease cups —and trusting that the lubricant would get to the spot required.

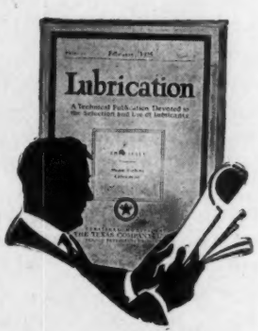
Now-a-days, with speeds and pressure far different than what they used to be, more positive means of oil or grease application are required.

Consequently, industry has turned extensively to mechanical pressure lubrication.

With this change, the human element in regulating lubricating pressures has been largely eliminated; but the necessity for alertness in the *kind* and *amount* of lubricant to use has been increased.

We speak with authority on this subject. We have studied it extensively; and much of our information is the result of actual experience on machinery within our own plants and throughout plants of thousands of satisfied TEXACO customers.

We can furnish you a time-tested TEXACO lubricant that will work most effectively and economically on any system of pressure lubrication you are using.



The December 1928 issue of this magazine, "LUBRICATION", is devoted entirely to the subject of Pressure Lubrication. We shall be glad to send you a copy and put you on the free mailing list to receive "LUBRICATION" monthly. Write to the address below.

THE TEXAS COMPANY

Texaco Petroleum Products

Dept. C1, 17 Battery Place, New York City

OFFICES IN PRINCIPAL CITIES

TEXACO

NOTES ABOUT MEN YOU KNOW OR KNOW ABOUT

J. M. Gregg, for the past three years secretary-treasurer of the Southern Textile Association, and, since its organization secretary -treasurer of The Arkwrights, Inc., has resigned these positions, effective January 1st. Mr. Gregg on that date became associated with Fred H. White, southern agent of The Stafford Company, Readville, Mass., and southern representative of other textile machinery and equipment manufacturers. Mr. Gregg will act in the capacity of selling agent.

During his connection with the association, Mr. Gregg has made extensive acquaintance in the industry, and has a host of friends who wish him success in his new undertaking. No official announcement has been made regarding his successor in the Association work.

Albert T. Matthews, who for years has been connected with the Hightower interests at Thomaston, Ga., has severed his connection as vice-president and general manager of the Thomaston Cotton Mills, Peerless Cotton Mills, and Aldora Mills, to become agent of the Martha Mills, at Thomaston, recently purchased from the Hightowers by B. F. Goodrich Rubber Company. The new owners, under Mr. Matthews' direction, will practically treble the capacity of the Martha plant, which produces tire cord fabrics.

Willis E. Johnson, general manager of the mills of the Consolidated Textile Corporation, died on December 4th at Lynchburg, Va. Mr. Johnson was a brother of Allen F. Johnson, active vice-president of that company.

Ellis T. Gurry, formerly manager of the Morrilton Cotton Mills, Morrilton, Ark., is now general manager of the Aurora Cotton Mills, Aurora, Illinois.

Frank A. Webb, for many years conected with Joseph A. Vogel Company, of Wilmington, Delaware, and more recently president of the Acme Frost Proof Closet Company, Baltimore, Maryland, has become associated with the "I-X-L" Pump and Manufacturing Company, 959 North 9th Street, Philadelphia, Pa., in the capacity of special representative. Colonel Webb recently made a trip through the southern section.

James H. Arthur, recently of the R. E. Loper Co., textile cost engineers, has accepted a position with the Judson Mills, Greenville, S. C.

E. E. Brignell has been appointed superintendent of the Trenton Cotton Mills, Trenton, Tenn., which were recently purchased by the Kansas City Knitting Corp., Kansas City, Mo.

Robert A. Morgan, agent of the Southern Brighton Mills, Rome, Ga., has resigned that position to assume the industrial managership of the American Chatillon Company, Rome, Ga.

John A. Law has been elected president of the Spencer Corporation, Spindale, N. C. The Spencer Corporation was formed by the merger of the Spencer Mills and the Spindale Mills, both of Spindale, N. C.

Leonard S. Little has been appointed general manager of the Slatersville Finishing Company, Slatersville, R. I. Until recently Mr. Little was works manager for Joseph Bancroft & Sons Co., Wilmington, Del. Prior to that connection he was general superintendent of the Pacific Mills, Lyman, S. C.

John W. Knowles, formerly overseer of carding at the Lanett Mill, West Point Mfg. Co., Lanett, Ala., died at his home on December 1st. after an illness of one year.

D. C. Jones, who has been superintendent of the Patterson Mills Company, Roanoke Rapids, N. C., has tendered his resignation to accept a similar position at the Chesnee Mills, Chesnee, S. C.

Archie O. Joslin, formerly treasurer and general manager of the Imperial Printing and Finishing Company, Cranston, R. I., has been appointed treasurer and general manager of the new bleachery of the new plant erected at Rock Hill, S. C.

H. E. Littlejohn, for some months assistant Southern manager of the Steel Heddle Manufacturing Company, has been appointed manager of the plant. He succeeds Hampton Smith, who recently resigned and who is preparing to build a plant to build a plant to manufacture heddles and other equipment.

James A. Bone, formerly assistant overseer of carding at the Lanett Mill, Lanett, Ala., has been promoted to overseer of carding.

J. Eugene Elliott, secretary and assistant treasurer of the Trion Company, Trion, Ga., has been appointed vice-president of the Riegel Textile Corporation and transferred to the New York office.

C. P. Thompson, who has been superintendent of the Trion Company, Trion, Ga., for many years, has been promoted to assistant treasurer and manager of the Trion Company, Trion, Ga.

C. B. Walker has been promoted from assistant superintendent to superintendent of the Trion Company, Trion, Ga.

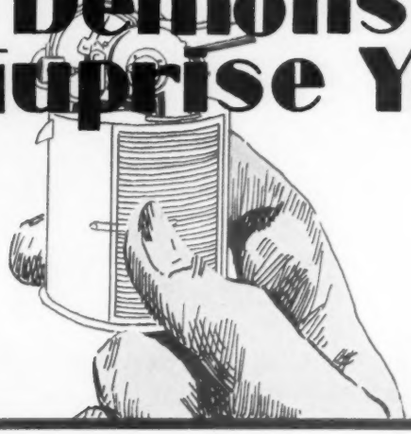
W. B. Williams, who recently resigned as overseer of weaving at the American Spinning Company, Greenville, S. C., has become overseer of weaving at Appleton Manufacturing Company, Anderson, S. C.

Roy Nanney has become connected with the Thies Dyeing & Processing Company, Belmont, N. C.

T. C. King, formerly overseer of dyeing at the Cramerton Mills, Cramerton, N. C., has become connected with the Yarns Corporation of America at the new plant at Spartanburg, S. C.

W. D. Shields has resigned his position as salesman and demonstrator with H. W. Butterworth & Sons Company, Charlotte, N. C., to become overseer of dyeing at the Richmond Hosiery Mills, Rossville, Ga.

This Free Demonstration May Suprise You



WE WELCOME the opportunity of making a demonstration of a Termaco or Utsman bobbin cleaner in any mill where a preliminary survey made by us leads us to believe a Termaco or Utsman will reduce production costs.

It is as simple a matter to obtain such a demonstration in your mill ***under actual working conditions*** as it is to have a radio or phonograph demonstrated in your home . . . and without any cost upon your part or the slightest obligation to purchase.

In mills, having roving or feeler bobbins to clean, Terrell bobbin cleaners not only have shown surprising savings but have helped speed up production and aided efficiency in spinning and weaving rooms.

Write for complete particulars regarding a Termaco (for roving bobbins) or an Utsman (for feeler bobbins) demonstration.

The Terrell Machine Co.

Incorporated

Charlotte N.C. · U.S.A

Uniform Bobbins Pay Dividends in Better Yarn and Better Cloth

GOOD yarn cannot be made on poor bobbins. The maker of your machinery will tell you that periodical inspection of card room bobbins will eliminate one of the causes of uneven roving and non-uniform yarns.

If your inspection shows bobbins that are off-size, split, or cracked, try replacing your defective bobbins with U S Guaranteed Card Room Bobbins. These bobbins are made to rigid specifications that will hold variations to a minimum, and consequently improve your yarn.

To be sure of uniformity, U S Card Room Bobbins are tested at the factory with the same type of gauge shown here and are guaranteed to be within the following limits of tolerance. Speeders, 6″, 7″, and 8″ traverse, are guaranteed not to exceed .0116, and Intermediates and Slubbers 9″, 10″, 11″, and 12″ traverse, are guaranteed not to exceed .0156 either side of the diameter specified. The same careful attention is given to the selection of stock, finish, and spindle, bolster, and gear fits that makes U S products the choice of the majority of mills.

Check over your old bobbins for variations, or write, wire, or 'phone for our nearest service man to help you adopt standard sizes if you do not already have them.

Every carder should have a *Three Point Card Room Bobbin Gauge* such as this one made by the Woonsocket Machine & Press Company.

A bobbin that is too large will not enter the gauge. A bobbin that goes way through is too small. Bobbins that stick on any of the three faces of the gauge are within proper tolerances, being just right, of course, on the middle faces. The shank of the gauge has three testing points by which the proper diameters of spindle, bolster, and gear collar holes can be checked.

U S BOBBIN & SHUTTLE CO.

PROVIDENCE, R. I.

GREENVILLE, S. C. HIGH POINT, N. C. PHILADELPHIA, PA. ATLANTA, GA.

BUILDERS OF BETTER BOBBINS, SPOOLS, AND SHUTTLES

AN OLD TIMER SAYS

In working with zest and giving his best,
Just for the pleasure of giving,
In the hope of helping his brothers along,
"Old-Timer" finds the sunshine of living

The conversation between Jim and Old-Timer, in the December issue, was interrupted by a boy messenger from the office, bringing Jim a note from the boss. Now go on with the story:

"COME ON, Old Timer, let's go to the office. Here is an order for a new style of goods, and I must figure out the yarns to make it and make out an order for the reeds and harnesses."

"No, Jim, I think it would be a bully idea to just sit right down here and make all those calculations where you won't have any records or catalogs or anything to go by."

"What in Sam Heck do you want to do that for? We can go to my desk and get my carding and spinning catalogs, which have all the production tables, twist tables, etc., in them and we can do the job in a few minutes."

"Yes, I know, Jim, but oftentimes it pays to have to figure these things out by main strength and awkwardness, to find out if you really could do it if you did not have the catalogs, etc., also to find out if you really know how to do it.

A Picture of Old-Timer In Next Month's Issue!

"Old-Timer" visited us in Atlanta recently, and his story about his trip will be published in the February issue. While here, our photographer caught the old gentleman in a typical pose, and the picture will be published next month with his story.

"Just as an illustration, not long ago I was watching a boss spinner reel off his yarn, preparatory to weighing it, and I asked him how many inches or yards it was around his reel, and darned if he could tell me. I also asked him why he divided the weight in grains into 1000 to get the number of yarn, and he said that was he way he was told to do it. When you are told how to do something, Jim, be sure you understand *why* it is done that way. It is difficult to remember rules, but if you will go into a calculation until you thoroughly *understand* it, you can remember how to do it the rest of your days.

"When I was first told that to multiply yards per pound of a style of goods by the width in inches, add the pick and sley and multiply by the result, then divide by 840 less a percentage for contraction and size, that it would give me the average number of yarn required to make that style of goods, I wrote it down on a very small piece of paper which I carried in my pocket, and while running a section, I would take out that piece of paper, at every opportunity, and study that rule. When I went home to dinner or supper, I laid that piece of paper on the table by my plate and studied it. I bet I said that rule over ten million times. In fact, I learned it like a parrot learns to say damn, but, like the parrot, I did not know what it meant. But later, I began to study yarn calculations, and finally got to where I really understood that:

$$\frac{\text{The length of yarn in yards}}{840 \times \text{count} \times \text{weight in pounds}} = 1$$

Then all yarn calculations were easy."

("Old Timer" will be glad to send, upon request, a little booklet, showing several calculations made with this formula, as long as the supply lasts.)

"The devil! You'll stand here and talk all day, Old-Timer, but I must get the information to my boss about this new style of goods, so if you want to sit down here and figure it out, for goodness sake make a start."

"All right, Jim, let me have your pencil and scratch pad. Here goes:

"60 inches, 48 × 48, 3.30-yard goods.

Figuring Warp Ends and Reed.

"First, determine ends in the warp and reed to use.

"From experience on other styles, etc., we estimate that this goods will contract in width about five per cent. We expect to put it through the brusher and calender, which will probably contract it some more, and as it is better to have the goods too wide than too narrow, we will allow six per cent over all.

48 — 6 per cent = 45.12 ends per inch in warp at reed.

60 inches wide + 6 per cent contraction = 63.6 inches warp at reed.

45.12 ÷ 2 ends per dent = 22.56 dent reed.

22.56 × 63.6 = 1434.816 dents in reed.

"The looms on which this style of goods will be made has 64 inches reed space. therefore, the 63.6 inches reed will practically fill up the reed space—leaving ½-inch for adjustment of reed to temples.

"In making 38-inch goods, or any width goods

which does not take the full width of the loom, you should have your reed to practically fill up the reed space as a guide for the shuttle. Many mills order reeds just wide enough to make the goods, then fill in the extra space in the loom with pieces of old reeds. This is not good practice. Your order for reeds would therefore read as follows:

"100 reeds 1434 dents spread on 63.6 inches.

3½ inches deep inside ribs ½-inch ribs.

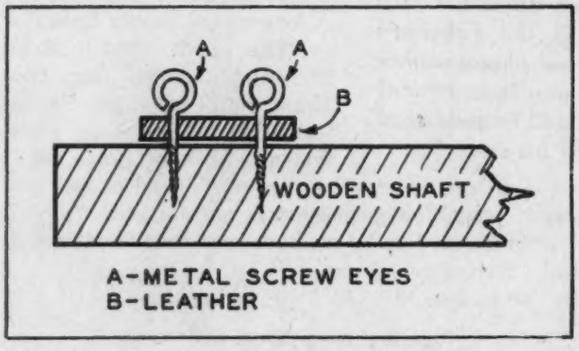
"Some mills order reeds 3 inches deep inside ribs, but it is generally considered that the small extra cost of ½-inch deeper is more than compensated for by the extra distance between ribs allowing the dents to spring open easier when a knot or gout goes through.

"The order for harnesses would be as follows:

"100 sets 2-shade harness 1434 eyes per shade + 22 eyes per shade extra or total of 1456 eyes per shade spread on 64.6 inches—length of shafts 65.5 inches.

"Be sure to measure the distance between Pitman arms on your loom to see that you do not get the harness shaft long enough to strike Pitman arm or the part of the lay sword which holds the Pitman arm.

"Most mills leave the size of twine the harnesses are made of to the decision of the harness manufacturer, which in most cases is all right, but you must bear in mind that the harness manufacturer wants his harnesses to last well, and he knows large size twine will last longer than small size twine; therefore, if you are ordering harnesses for a weave of high sley, it is important that you have them made of twine which will give you as much space for the warp threads as practicable, without, of course, shortening the life of



the harnesses materially. The harness should be made deep enough to prevent the warp from striking the wooden harness shaft when the shade is open. Many mills have them made an inch or two deeper, claiming the deeper harness make for better weaving, that is, less chafing, etc. If you will stamp the style of the goods on the outside of the harness, you will have less warp tied on in the wrong place than if you merely stamp the number of eyes on the harness. When you receive the harness, be sure to have small strips of leather cut to insert the screw eyes through; this will prevent many broken eyes, caused by section men running screw eyes down too far in setting harness.

"Look at most any pile of old harnesses and you will see that they have more broken and repaired eyes at the metal screw eyes than any other place. The sketch shows how to use these pieces of the leather.

"45.12 ends per inch at reed × 63.6 = 2869 ends + 24 selvage = 2893 total ends in warp. 2893 ÷ 8 = 360 ends per warper beam (leave off the 3 ends).

"Many mills have warpers which hold enough spools to enable them to make this set on 7 beams. However, 8 beams will give you a better lease on the slasher because you will have 4 beams going over the lease rods and 4 under, while with 7 you will have more yarn either over or under and you will have less sets of 8 beams than you would of 7 beams; therefore, less waste.

"It is generally considered good practice to make as many beams per set as you can not to cause your spools to run out in the warper, and providing you have enough ends to make a fairly smooth beam.

"Now, we want to know what yarns to use and how many machines it will take to produce the required yards per week the customer has called for. (If we figure for 100 yards of cloth, it will make the calculations easier on account of eliminating the fractions.)

"The warp in this goods will probably not contract more than 3 to 4 per cent, and if we are putting on 10 to 12 per cent size we will add say, 15 per cent to the weight of the warp yarn for size and contraction.

"2890 total ends × (100 + 15) yards = 332,350 yards of warp yarn in 100 yards cloth.

$$\frac{332{,}350}{23\text{s warp} \times 840} = 17.20 \text{ pounds warp in 100 yards}$$

$$\frac{100 \text{ yards cloth}}{3.30 \text{ yards to pound}} = 30.3 \text{ pounds of warp and filling in 100 yards of cloth.}$$

30.3 — 17.20 pounds of warp = 13.1 pounds of filling in 100 yards of cloth.

Length of one pick of filling:

$$\frac{63.6 \times 48 \text{ picks} \times 100 \text{ yards}}{13.1 \text{ pounds} \times 840} = 27.7\text{s number of filling required.}$$

Customer wants 150,000 yards per month or 150,000 ÷ 4 1/3 weeks per month = about 35,000 yards per week.

$$\frac{128 \text{ picks per minute} \times 60 \times 55 \text{ hours}}{48 \text{ picks} \times 36 \text{ inches per yard}} = 244 \text{ yards per week per loom at 100 per cent.}$$

35,000 ÷ 244 = 143 looms or 72 looms if run day and night.

"We will figure all machinery at 100 per cent production, then allowance for stoppage may be made as local conditions require. We are also not making any allowance for waste at each process.

Spinning Production.

$$\frac{\text{1-inch front roll} \times 3.1416 \times 120 \text{ R.P.M.} \times 60 \times 55}{840 \times 23\text{s warp} \times 36 \text{ inches per yard}} = 1.78 \text{ pounds of warp per spindle.}$$

$$\frac{\text{1-inch} \times 3.1416 \times 135 \times 60 \times 55}{840 \times 28\text{s} \times 36 \text{ inches}} = 1.66 \text{ pounds of filling per spindle.}$$

We must know pounds of warp yarn wanted before the size is put on it; therefore, we have:

$$\frac{2890 \text{ Ends} \times (100 + 4 \text{ per cent contraction})}{23\text{s} \times 840} =$$

15.5 pounds of warp per 100 yards cloth or .155 pounds per yard.

35,000 yards per week × .155 = 5,425 pounds of warp required.

5,425 ÷ 1.78 pounds per spindle = 3,047 spindles on warp.

3,047 spindles on warp ÷ 224 (spindles per frame) = 12 frames or six frames day and night.

3,500 yards × .131 pounds of filling per spindle = 4,585 pounds of filling required.

4,585 ÷ 1.66 = 2,762 spindles on filling ÷ 208 (spindles to frame) = 13 frames or 7 day and night.

Now determine the hank roving to use:

As 840 yards = 1 pound of No. 1 yarn, and there are 7,000 grains in 1 pound.

The weight in grains of 840 yards of yarn into 7,000 grains will equal the number of yarn. But as reeling 840 yards of yarn would be too much waste, we only reel 120 yards, and as 120 yards is 1/ 7 of 840, we divide the weight in grains of 120 yards of yarn into 1000, (which is 1/7 of 7000 grains) to get the number of yarn, or divide the number of yarn into 1000 = weight in grains.

$$\frac{1000}{\text{23s warp}} = 43.5 \text{ grains, practically.}$$

A fairly good draft on 23s warp spinning would be 10 figured by weight of roving going in divided by weight of yarn coming out (the mechanical draft will be more than 10 on account of the take-up the twist puts into the yarn).

43.5 × 10 = 435 grains (in 120 yards) going into spinning frame.

$$\frac{435}{2} = 217.5 \text{ grains, weight of 120 yards of roving}$$

going into spinning frame. (Double roving.)

But as we only weigh 12 yards of roving and 12 is 1/10 of 120,

$$\frac{217.5}{10} = 21.75 \text{ grains in 12 yards of roving}$$

$$\frac{100}{21.75} = 4.61 \text{ hank roving.}$$

Speeder Production.

1⅛-inch front roll

$$\frac{1.125 \times 3.1416 \times 120 \times 60 \times 55}{840 \times 4.6 \times 36 \text{ inches}} = 10.07 \text{ pounds}$$

per spindle per week. Take off 10 per cent for doffing = 9 pounds.

$$\frac{\text{5425 pounds warp required}}{9} = 603 \text{ speeder spin-}$$

dles (152 spindles to frame) = 4 frames.

A fair draft on speeders for 4.61-hank would be about 5.5. 21.75 (weight of 4.61-hank) × 5.5 = 119.6 grains ÷ 2 (double) = 59.8 grs. weight of intermediate roving going into speeder.

$$\frac{100}{59.8 \text{ grains}} = 1.67\text{-hank intermediate."}$$

"No need to go any further, Old-Timer, we are long on intermediates anyway, and I can take the intermediate roving I have and make that speeder roving, therefore, we need not go on back through slubbers, drawing and cards.

"Golly! it is four o'clock! You wait here in the weave room while I hustle out to the office and get my order in for the reeds, and I will meet you back here."

[Editor's Note—"Old Timer" has explained these calculations in detail and wishes it stated that he knows there are many other ways of arriving at the conclusions, but wishes it distinctly understood that the calculations are only intended for those who are not proficient in textile calculations, so those experts who can figure things down to a gnat's heel need not feel peeved, nor go to the trouble of criticizing, because these calculations were not intended to teach them anything.]

(Jim had gone to the office to order his reeds and harness, and tell the boss he could make the new style of goods.)

"Well, you're back pretty quick, Jim. When you went out I thought you were fixing to pull some of that stuff like you did over at the textile show."

"What are you referring to, Old-Timer? I don't know of any stuff I tried to pull. I thought we had a pretty good time."

"Never mind, Jim, you know I caught you, and if you ever try getting smart with me before COTTON'S readers like you do sometimes, I'm going to spill the beans."

"Well, spill all the beans you want to. I don't have the least idea of what you think you've got on me, and more than that I don't give a darn!"

"You don't, eh? Well, how about leaving me in the show so many times and saying you'd be back in a few minutes?"

"Well, I did come back in a few minutes every time, didn't I?"

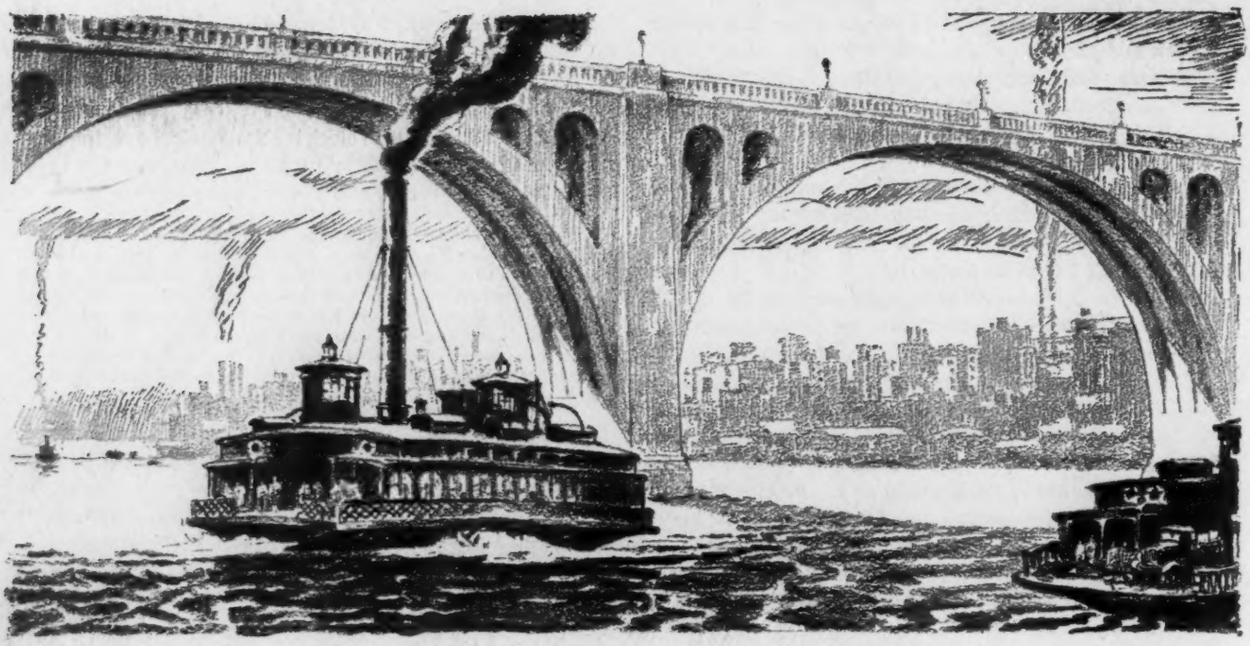
"Yes, but there's no need arguing with you any longer. I'm going to tell it: Jim had four complimentary tickets to the show that some exhibitors had sent him, and since he couldn't stay but one day dadblamed if he didn't leave me about every hour and walk right out the door like he was the whole cheese, just to come back in and use those tickets."

"Shut up, you old fool, that wasn't any worse than your taking the basket we brought our lunch in and going through the show with that old egg basket hanging on your arm with a sign on it 'Please put souvenirs here', and I saw one man throw a chew of tobacco in it."

This installment concludes "Old-Timer's" report of his latest visit with Jim. I think it was an appropriate time to conclude it, otherwise, judging from their conversation, we might have had a fight on our hands. And, while it's all right for him to make speeches and visit, and so on, I positively prohibit his engaging in physical combat. His whiskers would provide too good a hand-hold for Jim.

For the next few months, "Old-Timer" will talk to you about various phases of mill work and anything else which may occur to him. In the meantime, he will visit Jim again, and we'll ask him if he won't tell us about his trip before very long.

Editor Cotton.



Why stick to the ferry when a BRIDGE *is available?*

WHAT would *you* think of a traffic manager who routed his fleet of trucks across a slow, old-fashioned ferry when a fine bridge is available? —Does anything equally absurd ever occur in *your* organization?

Take your mill operations, for instance. Are they slowed down and their product impaired by antiquated equipment?

That is exactly the case with humidifying apparatus in many a mill operating today. And the result? Decreased output, insufficient regain, trouble from "static" induced when the air is dry, and waste in time (in tying up frequent end-breaks and starting up frames, for example) — all for lack of proper humidity control. Yet such items may exist in your mill and are likely to escape your notice unless you avail yourself of expert advice.

This newly designed Amco Humidity Control automatically regulates and controls humidity in Textile and other mills without using wet or dry bulb actuated devices.

If you want the *true* facts let an Amco "Air Doctor" examine your mill and give you an impartial written diagnosis,— without charge or obligation on your part.

Even the complicated humidity controls of recent years are now obsolete and giving place to the new, simple and well-nigh infallible Amco Humidity Control.—Better send for an Amco "Air Doctor" *today*.

AMERICAN MOISTENING CO.

Humidifying Devices

Air Doctors Since 1888

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261 West Exchange Street,
Providence, R. I.

SALES OFFICES
Boston, Mass. Atlanta, Ga.
Charlotte, N. C. Greenville, S. C.

DYERS *and* FINISHERS Division Meets *at* Greenville

A PROFITABLE meeting was held in Greenville, S. C., on December 15th, by the Dyers', Bleachers', Finishers' and Mercerizers' Division of the Southern Textile Association, each of the subjects covered by the group being considered. Paul F. Haddock, the general chairman, presided, being ably assisted by the chairmen of the various sections of the group. The meeting was in three sessions: a lunch at which five papers were read; an afternoon session for practical discussion; and a banquet in the evening with suitable entertainment.

The papers presented at the luncheon were comprehensive, and a brief summary of each will be found in this report. No report is permitted of the group discussions held during the afternoon. At the banquet, prizes contributed by Carolina mills were awarded. John W. Arrington, president of the Union Bleachery, Greenville, and Dr. D. W. Daniel, of Clemson College, S. C., together with Carl R. Harris, president of the association, were the chief speakers.

S. T. A. To Operate Course in Dyeing, Bleaching and Finishing

IT WAS announced by President Carl R. Harris, at the Greenville meeting of the Dyers', Bleachers', Finishers' and Mercerizers' Division, that the Southern Textile Association, through that division, will set up a course in dyeing, bleaching and finishing, and award diplomas to students successfully completing the work.

The plan is to adopt textbooks on these subjects, which will be secured by the applicant for the diploma. Examinations on the books will be given at an accredited southern textile school, and, upon successful completion of the course of study and the passing of the examination, the Association will award a diploma of proficiency. The course will be open to all, it is stated; and further details will be announced later.

The first paper presented at the luncheon was prepared by Henry W. Ormand, Union Bleachery, Greenville, S. C., read in his absence by Richard W. Arrington. He was assigned a discussion of "Single and Double Boiling for Cotton Piece Bleaching."

Single and Double Boil in Bleaching.

He pointed out that with the single boil, less equipment is required, as no operations are repeated, and there is a saving of a day's time under certain conditions, a saving in labor and in steam. He reported the following test as to loss of weight in goods in the single boil as compared to a double boil:

"We took several two-yard samples each of 39-inch, 68x72, 4.75-yard print cloth, 37-inch 128x68, 4.35-yard carded broadcloth, and six-ounce duck, weighing them in the grey and as they came out of the various operations, the samples being dried before weighing. After starching, washing, grey sour and washing, these samples lost in weight as follows: the print cloth 6.25 per cent; broadcloth, 5.5 per cent; duck, 2.7 per cent. After boiling the goods, the print cloth had lost a total weight of 13.9 per cent, broadcloth 15 per cent, and duck 11.35 per cent. In other words, a good portion of the size was removed by steeping and grey sour, but the bigger portion was removed during the boil. You will note there is scarcely any weight lost after the boil; that is, in the treatment with chemic bleaching operation. In the case of print cloth, this amounted to .4 per cent, broadcloth, .6 per cent, and duck 1.2 per cent."

After boiling similar samples twice, the following losses in weight were noted: Print cloth, 13.9 per cent; broadcloth, 15.6 per cent; and duck, 11.68 per cent. These, Mr. Ormand stated, were in line with his experience—that on medium weight fabrics, the single boil is quite sufficient, but when handling heavy fabrics, the second short boil gives better results.

He added that where the grey sour is omitted, the color of the goods is not clear, clean and white, compared with goods that were grey soured. Sometimes after the single boil, he said, stains appear on the goods, caused by the kier liquor depositing on the goods certain colored matter. This he believes due to washing the goods while in the kier with cold water, immediately after the boil; more pronounced in Winter.

Mercerizing with and without Oils and Waxes.

W. R. Wells, superintendent, Elmore Co., Spindale, N. C., discussed eliminating cotton oils and waxes before mercerizing yarns, and mercerizing before eliminating oils and waxes on yarns to be subsequently dyed. Yarns mercerized for the knitting trade, he said, should retain the original grey yarn softness, and it is not necessary to remove all the oils and waxes, but the yarn is given a short boil to soften the oils and waxes. He added that boiled-out yarn can be resoftened after mercerizing with suitable oils; and, answering the question as to why they should be removed and replaced with expensive softening agents, explained that lack of penetration in spots will cause uneven mercerization; that these spots may be insect secretion or mineral oil used in spinning, and that some use penetration compounds to insure thorough penetration. He prefers lengthening the boil for this purpose, however.

(*Continued on page* 326.)

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Reverse the operation: Trust to Facts for imagination and to Figures for memory—and Business is lifted out of the realm of Fancy.

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Stopping Snarled Ends without Feelers.

EDITOR COTTON:

In weaving sheeting on an automatic loom, without feelers, what would your readers advise to prevent double picks, as well as snarled ends of filling coming in the cloth at the transfer of the quill?

CONTRIBUTOR NO. 4127.

Safety First in the Card Room.

EDITOR COTTON:

We are all undoubtedly thoroughly acquainted with the slogan "The best safety device is a careful man," and we likewise realize, notwithstanding the numerous safety devices, warnings, etc., now placed in most mills, we shall always have to contend with the greatest failing of human nature, namely, carelessness. Next to the latter, we have to deal with ignorance, to a certain extent.

My chief aim, in making these few safety remarks —shall we call them?—is to point out several mistakes, careless and otherwise, which occur daily in our mills today, many of which are very likely to cause accidents to the offenders and others.

However, in this letter I will deal with the errors as I see them occurring in the carding department. My first warning is directed to card grinders, who, by the way, should always have before their minds those two words "safety first" as they apply in most all jobs around the cards. But alas, they, like others, forget sometimes, or maybe worse than that—they take chances.

I may say that these few remarks were instigated through my chance meeting with a careless card grinder. This man, at the time, was setting flats, at least he was expecting to do so, as was indicated by the absence of five flats at the required points. So far, so good, but—now for the error: This grinder having removed the flats from the section of the bend, of course decided that cranking the flats to the proper position was a little too much work, so he promptly started the card to drive the flats and save the hard cranking, which was excusable had he stayed right near the card. Of course not, who wants to stand around a card waiting for flats to travel so far around? No, sir, so he probably took a stroll around the room until he thought the said flats would be in the place for setting. In the meantime, the card was still running, with no grinders near by. The boss grinder happened to walk along and naturally imagined these flats had been set and decided to feel at them in the customary way, but, luckily for him, he was prevented from doing so by the intervention of another man who had noticed the missing flats. But for this timely warning, the boss grinder would have stood a chance of being minus one or two fingers—precious equipment nowadays.

On being reprimanded, the offending grinder pled his lack of thought that anybody would go near the card. That is the point, we can never know the trend of the human brain, or what the other fellow is likely to do. So why not stick to the rule always—safety first! and do that job as it should be done. Have the machine stopped with the driving belt away from it, as it is safer for the man, as well as others who are working nearby. There is too much of the idea of "taking a chance" in mills at the present time.

For instance, the writer has seen men and knows many who think it very clever to be able to throw on a driving belt of a card by means of using either of their feet. This is a very dangerous practice, as some fellows have already found out and others will find out sooner or later. By using the foot in this fashion. that is after having thrown the belt on the pulley or the driving shaft, then using the foot to throw it onto the loose card pulley, one is never sure whether the belt will jump the pulley, especially when a little too tight, and catch hold of the operative's foot, which will surely end in a very nasty fall, at least.

Always use the hands for this job, as I believe that our hands act more readily with the brain than do our feet; hence, stronger control is the result, not to mention the fact that a man has a safer position when standing on his feet.

Another point of safety around the cards, which ought to be impressed upon those in charge of this department of the mill, is to warn all card tenders who happen by any chance to have a licker-in "stuck" that they should immediately stop the card.

Sometimes we happen across a stripper or card-tender with a licker-in jammed through having allowed a lap to run in double. The main cylinder running full speed, and this man trying his utmost to force that licker-in round to loosen same. He perhaps comes to the conclusion that there must be a hard lump of stock underneath somewhere and naturally investigates; hence the danger. Mind you, all this can happen before those in charge, grinder or anyone else, can detect it, but sometimes it is too late.

In that case, eagerness to escape a call-down, coupled with the desire to get the licker loose, is oftentimes the cause of serious accidents, in addition to causing considerable damage to the machine. They should be forced to be careful, especially after having taken off the back panel, when removing screen waste.

One great idea of warning at this point would be to have this most dangerous place marked, say by a large red painted circle, and on seeing same, the operative would naturally have brains enough to Stop! Look! and Be Careful!

In some mills, known to the writer, card grinders are required to use the air hose on all grinding cards, especially before grinding same, which is a splendid idea, but even as such, in its performance there is the greatest need for caution. What I mean to advise in this case is that overseers or others responsible, should compel them to use a pair of goggles or eye protectors of some description, as there is always a great danger of the operative losing his sight if the eyes are not protected, and surely eye protectors are cheap enough and give very little trouble in adjusting. Many a man who would not wear goggles, at present is forced to wear a glass eye.

A short time ago the writer witnessed a rather serious accident, and we might call it a very unusual one. Still, the same is likely to occur in any mill in the same circumstances. A card tender was carrying a lap on his right shoulder in the usual way, but not correctly. Had he done the right thing, the accident would not have been so serious. This man held the lap rod or "stick" allowing the end to protrude instead of placing his hand over the end. Carrying the lap incorrectly, as previously stated, and proceeding at a very brisk pace, he had to turn a corner, at which he collided with a fellow worker whose face received the end of the protruding lap stick, causing that man great pain.

Lap carrying should be done the correct way, when men sometimes must carry them on their heads or shoulders. The end of the rod should be kept covered with the hand, as it is safer and easier.

In conclusion, I may say that we should all endeavor to keep the floor around the cards free from patches of oil, especially from the comb boxes. There seem to be more bad falls, resulting in sprained backs, ankles, etc., through a slip on some small patch of oil, than anything we know about, and it is very easy and simple to correct this evil.

Safety always should be our watchword, especially when everybody understands that the National Bank of Safety will pay big dividends on every careful habit.

D. E. (R. I.)

Rayon Course at V. P. I.

It has been announced that the Virginia Polytechnic Institute, Blacksburg, Va., will install a course in rayon chemistry. This course will be open for seniors in the chemical engineering department of the school. The new course, as explained by Dr. Negus, will include lectures and laboratory work covering the chemistry of cellulose, the basi principles involved in the manufacture and finishing of rayon, and the chemistry of these processes, a study of the raw materials used and the various factory tests.

To Stop Shuttle Marks on Three Leaf Goods.

EDITOR COTTON:

In reply to the question asked by "R. C. (GA.)" relative to mis-picks or shuttle marks on 3-leaf goods, he does not state whether he is using a filling feeler or not. If he has no filling feelers he can not stop the mis-picks until he has these applied.

Some of the things that might be causing this trouble are: the loom may change sluggish on account of slack belt; loom picking late, or the shuttle feeler banking against breast beam; shuttle rebounding, or not going up in box under battery as it should; too much power on the picker stick (use more belt power and less stick power); not having long enough stroke on filing motion, sometimes called snake head, will cause this trouble.

If he will use a good grade check strap and make it really check, it will help. Then take some of the tension off protection rods, binders, parallels and run a slack shuttle box with plenty of check on sticks.

If he will do all these things and see that there is the proper amount of humidity, his troubles should be stopped. Sometimes the filling fork will raise and lower sluggishly due to it binding a little; this will cause mis-picks.

CONTRIBUTOR NO. 4060.

Running Humidifiers Over the Week-End.

EDITOR COTTON:

In answer to "THIRSTY COTTON'S" letter on running humidifiers over the week-end, will say that cotton in the carding department is darned thirsty.

While the mill is in operation the cotton, of course, is moving and, therefore, absorbs less moisture; whereas, over the week-end the cotton stands still and soaks up a lot of moisture if the humidifiers are left running, regardless of the maintenance of temperature.

In our mill part of the carding runs at night. If the humidifiers are not shut off in the departments that do not run at night we have trouble when starting up in the morning. For at least 45 minutes the ends on the roving frames sag and run very slack causing them to break back and make poor roving. On the combers the delivery cuts at the detaching rolls, or is too heavy to be drawn from the half-lap and is drawn down into the waste can. On the drawing frames the ends will lap up on both the steel and leather rolls.

Roving that sizes perfectly in the middle of the day is invariably heavy in the mornings when we start up. This shows that the cotton has absorbed more water than is advisable.

If the mill is closed as it should be over the week-end, and is a correctly built mill, very little heat is needed to maintain the proper temperature, consequently the humidity will stay very nearly the same.

These conditions have been practically the same in the seven mills I have spent the last 18 years in, and are facts intended to get the views of other men on this subject.

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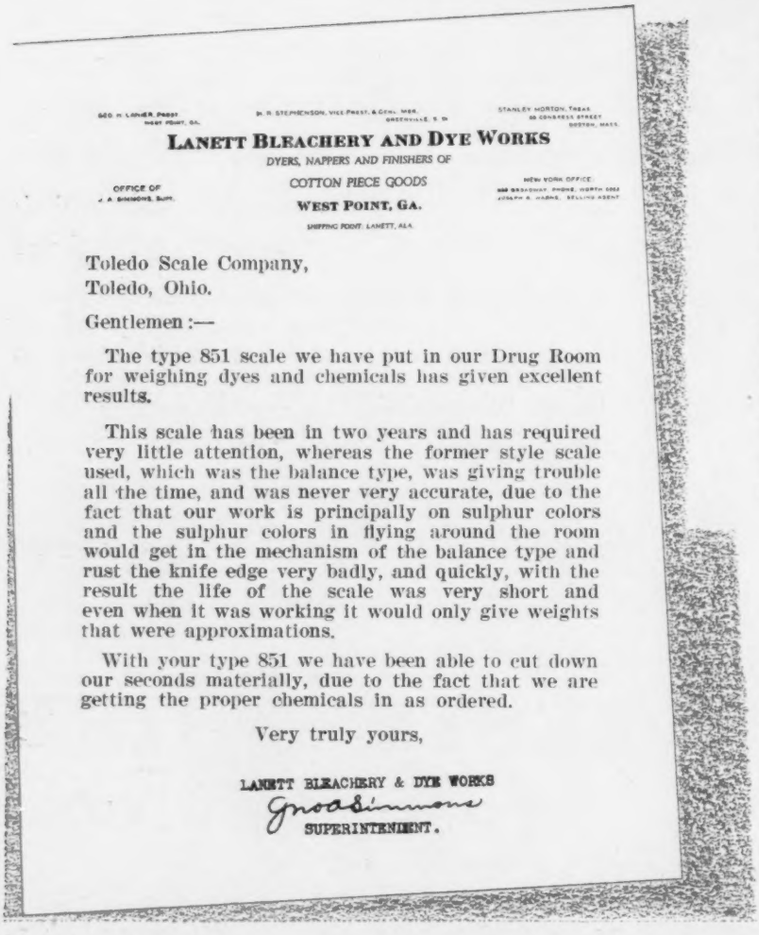

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Your name, please.

Cotton, Jan. 1929.

Supervision of Warp Preparation.

EDITOR COTTON:

One of the simplest of the processes in the preparation of yarn is spooling or transferring the yarn from the warp bobbin onto the warper spools. Yet this simple process is not given the proper amount of attention. One hour spent among the spoolers by the overseer will bring to his attention many defects in the yarn that can be corrected. How many overseers take time to investigate and inspect the spoolers to see if the guides are set close enough to catch the slugs and bunches that come in the yarn, and which, if let go through, will later cause trouble and loss of production in the weave room?

Many spooler tenders will place waste underneath the base of the guide to raise it up so that the yarn will run through freely, thus allowing the slugs, knots and bunches to pass through without being checked by the guide, so that they will not be bothered tying up broken ends.

The spooler tenders being paid by piece work or by the number of pounds put through their machines each day, it is only natural that they will try to get their work out with the least amount of trouble. As there is no way of checking their work after it is sized and in the weave room, it can readily be seen that it is the duty of the overseer to make an investigation at different times to see that the guides are set so as to stop these slugs from going through. Many mills have changed from the old system of warp wind, or from one end of the bobbin to the other, to the new system of filling wind warp bobbins built up in the same manner as a filling bobbin. This system will allow more yarn to be put on each bobbin and should make the spooler tenders' work easier and at the same time the yarn will run off the bobbin without any of the waste that is common to the other method. This waste is made by the yarn catching on splinters where the bobbin has been cut by the spooler tender in removing yarn from the bobbin. See that the guides are set close enough to catch the slugs and bunches and we can be assured that we have done one good thing in helping to make better work, as far as the spooling is concerned.

In regard to the slugs that are twisted into the yarn during the spinning process, we will generally find that carelessness in cleaning the spinning frames, clearer boards that are not cleaned frequently enough, doors and windows that are left open on windy days, are some of the chief factors in causing this fly waste to catch onto the yarn as it is being spun and causing a bunch or slug to form and spoil the quality of the yarn when finished.

I have noticed on the spinning room floor small loose balls of fly waste that at first glance seemed to have been thrown on the floor by the spinner. Upon investigation, however, I found that the air in the spinning room is full of small cotton fibers floating around, and as they fell to the floor, the draft from the open windows or doors blew the waste together, thus forming a small ball or bunch of fly waste.

This same condition exists on the creels of the spinning frame. The loose fibers as they fall, being blown into a bunch, and if blown near the rolls or traveler, will be drawn in and either spun or twisted into the yarn, and form a slug or bunch, which if not taken out at the spooler will cause trouble later on in the weave room.

The spinner, when piecing up broken ends, or in putting in roving, cleaning or doing various other things comprising a part of their work, will often knock a piece of fly waste onto the roving or onto the yarn as it is being spun, and the result is slugs. Carelessness in cleaning by the spooler tenders by fanning their machines while they are running, will cause this fly waste to stick to the ends and while much of it drops off in going through the warper there is always enough which goes through to cause trouble later on. Most mills have knot-tying machines for their spooler tenders, so that unless there is a large percentage of broken ends, the trouble from spooler knots should not be serious. Of course it is always understood that the fewer the knots, the better the yarn will run in the looms.

If a mill expects to have good yarn, their special attention should be given to this phase of the work, for it is the small items such as these mentioned, that spoil or ruin all the good work done in the preceding rooms. Very few of the spooler tenders realize what these slugs, bunches and knots mean to the weaver. The loss in weaving production and second quality caused by ends breaking when the slugs fail to pass through the reed is no small matter, and no overseer, if he has the welfare of the mill at heart, will allow conditions such as these to exist without doing all in his power to stop it. Another part of the spooler that should be given attention is the traverse, and care should be taken to see that it is set to run neither too long nor too short, as either way will cause trouble when the yarn reaches the warper.

Warpers.

On the warpers we find another source of trouble in the way the warper tender ties the knot when the end breaks. This knot, if it isn't properly tied, is the cause of much trouble in the weave room, for if the weaver does not see the knot and cut off the end, or if the knot is too large, it will not pass through the reed, and the result is loom stoppage and second quality cloth. The warper-tenders should be instructed as to the best kind of a knot to tie, and the overseer should insist that they tie the knot in the proper way.

The stop motion on a warper should always be in good working order so that the machine will stop when the ends break, and the warper-tender should be made to find the end and tie it. Some warper-tenders, instead of finding the broken end on the warper, will simply take the end from the spool and twist it around one of the ends on the warper and start up the machine. It can readily be seen that the result will be a cause for trouble at the slasher. If we stand near a warper while it is running, we will notice loose fly cotton flying around, and once in a while a piece will catch onto a thread and seem to twist around it as it is carried onto the beam. This loose fly waste will then pass along with the ends through the size box of the slasher, and this is one of the most serious conditions

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that confront any weave room.

It will be noticed that some of the new high speed warpers are equipped with a small electric fan to blow away this fly waste, to keep it from catching onto the guides or ends. There is also a small fan which travels back and forth above the drop wires and keeps them free from lint and waste so that they may drop clean when an end breaks. Now, why wouldn't this method apply to the old style of warper, that is, to install an electric fan to move back and forth across the warper over the drop wires? I feel sure that it would drive a large amount of the fly waste away and prevent it from catching onto either the drop wires or the warp threads. The cost of installing a small electric fan for every warper would soon be repaid in the improved condition of the yarn as it leaves the warper.

Attention should be given to the manner in which the warpers are cleaned, for like the spoolers and spinning frames, carelessness in cleaning is often the main cause for the slugs and bunches found in the yarn.

It is almost impossible to estimate the damage done, affecting the condition of the yarn, by the lack of supervision on the part of the overseer or the neglect by the operatives at the spooler and warper, because the results are only found in the condition of the yarn as the warps weave out in the weave room.

It should be the aim of every overseer of spooling and warping to devote as much of his time as possible to educating his help in carefulness and prevention of inferior work leaving their machines, when with a little patience and perhaps a little extra effort on their part much better results would be obtained in the processes that the yarn goes through after leaving their machines.

Slasher.

From the warper the yarn moves along to the slasher to be sized and beamed. At this process we will find one of the most neglected and I might add, one of the costliest of processes, due to the value of the yarn as it reaches this stage of the work.

A good conscientious slasher tender is a valuable asset to any mill, but no matter how good his intentions may be, other elements will enter into this phase of the work that without constant checking up by the overseer will result in poor work being turned off the machines. It is common knowledge to any weave room overseer that the most serious faults found in the warps can be traced back to the slasher.

The preparation of the size to be used is of vital importance and should be given the best of care and attention if the best results are expected from the slasher. This work should be placed in charge of a reliable man and he should be instructed as to the amount of each kind of material to be put in at each mixing of size, the time required to boil the size, and keeping the kettles in a clean condition. This may seem easy enough, but there are many instances where too much confidence placed in a man, without frequent supervision by the overseer, leads to carelessness or indifference, and the result is poorly dressed warps.

The size box of the slasher is next. The best method of telling when we have the correct degree of heat for boiling the starch and getting the proper thickness according to the class of work that is being run through the machine has been the bone of contention among overseers in years past, and in all probability will be in years to come.

One thing is certain, however, and that is the necessity for keeping the size box clean and free from any oil and grit that may happen to fall into it. Many mills have their size boxes piped so that at the end of the day's work they can sewer the size left in the box. While this may seem like wasting good size, and no doubt the value of it is being lost, still, it has been proven by different tests, that in leaving the size in the box all night to be used again in the morning, the size loses some of the strength and efficiency that we will find in the freshly-made starch. These size boxes should be thoroughly cleaned each time the size is sewered, and in this way we will be able to keep up the work free from any grit that may cling to the sides, and which may fall off and spoil the work.

It has been a common occurrence for a slasher tender, when finding that his size is too thick, to pour cold water into his size box to thin it out, or, if it is too thin, to throw in a couple of handfuls of starch to thicken it. These methods should be avoided, as they are a few of the causes that lead to poorly-sized warps. No matter how good the yarn is, if the warp is not properly dressed, the warp is spoiled as far as weaving it is concerned. Care should be taken by the slasher tender to see that his warp is drying properly as it goes onto the beam, as a warp that is beamed damp, causes a great amount of trouble in weaving, and in many cases such a warp has to be taken out of the loom on account of not being strong enough to stand the chafing it gets at the reed. The cylinder plays an important part in the work of a slasher, and while there is nothing that the slasher tender can do except to see that he has sufficient heat to dry his yarn to the degree that will give to it that strength or elasticity that is so necessary if strength and smoothness is desired in the weaving qualities of the yarn. This being a mechanical problem, it should be given its proper attention, for without a doubt, there is more work spoiled by the cylinder of a slasher than by any other part.

The insides of the section beams is another place to watch for the rough places caused by the transit of the beams between the warper and the slasher. These rough edges unless smoothed down, will cut the yarn if it rubs against them. Hitchbacks is another form of trouble we find at the slasher, although most of it can be traced back to the warper tenders and should be reported to the overseer so that he can trace back to the one responsible for it. It can readily be seen from the preceding faults, that although spooling, warping and slashing seem to be simple processes in comparison with the different ones throughout the mill, they are just as vital to the welfare and efficiency of preparation as any of them and should be given all the time and supervision by the overseer of which he is capable. Supervision, and plenty of it, is the only solution for these faults if they are to be corrected.

The problem of warp preparation has long been a

We Ma

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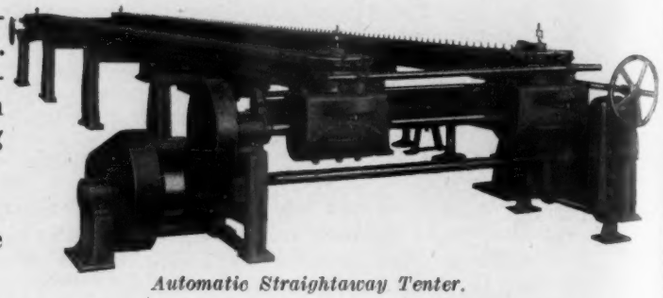
Kiers of every description with either motor pump and heater or Rusden Circulation for high or low pressure.

The illustration shows a pressure Kier with Motor Pump and Heater Circulation which has the advantage of constant liquor strength, there being no steam admitted to the liquor to cause dilution. All types of Kiers are made in all sizes.

The most recent development in Automatic Straightaway Tenters is shown. Embodied in this tenter are such noteworthy features as—Roller Bearings on the main drive—Totally enclosed gearing —New Type Tenter Link.

Write for illustrations and descriptive details.



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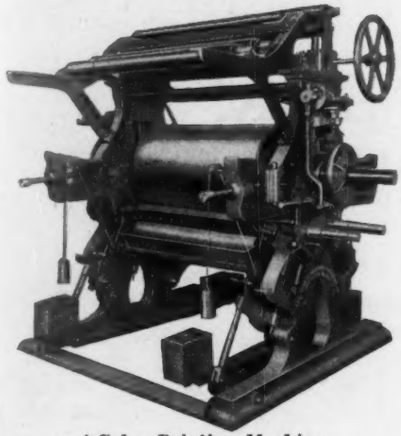


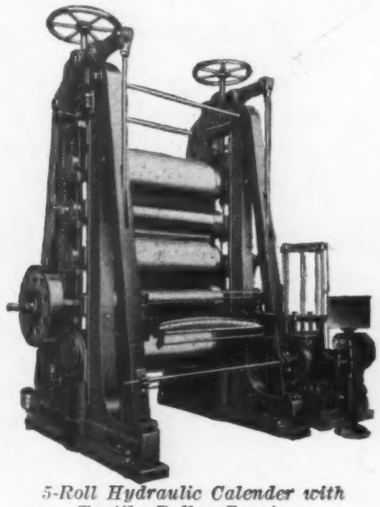
4-Color Printing Machine

This four-color Printing Machine is the most modern development in equipment for printing fabrics. We build these machines in all widths and numbers of colors.

We also manufacture the Back Framing, Back Dryers, Grey Dryers, Agers, Soapers, etc.

The five-roll Hydraulic Calender illustrated is typical of our equipment. The heavy cast iron framework supports three press and two metal rolls the bottom roll running in Textile Roller Bearings. The Hydraulic unit consists of a motor driven pump and a large accumulator with the necessary piping to the cylinders and rams.

This is only one of our line of Calenders which includes Rolling, Hydraulic, Friction, Schreiner, Embossing and Silk.



5-Roll Hydraulic Calender with Textile Roller Bearings.

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Is This Fuse Efficiency?

Here's an excerpt from an Industrial Engineer's letter that paints a word picture of efficient and superior performance:

> "The three 400 Amp. 220 Volt fuses recently put in at the ——— ——— Plant are giving fine service. These fuses replaced three ————bare link fuses loaded up to 600 and 800 Amp. which were continually giving trouble.
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> They have enjoyed two weeks twenty-four hour day operation without a shutdown since the change."

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Deriving pleasure from fuse performance and saving money by eliminating unnecessary shutdowns, are inherent qualities of TRICO Renewable Fuses.

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subject of deep concern to every cotton mill executive. Every sound workable method should be used in an effort to check these wasteful items as outlined in this article. Failure to take any constructive steps in lessening the burden forced upon the weave room by the destructive methods used in the preceding processes, and over which the weave room has no control, will mean that the mill will have a high percentage of second quality cloth besides the added loss in production due to loom stoppage.

It is surprising when we think of the time and money spent in improving the machinery in the carding and spinning departments, that very few, if any, improvements have been made on the spoolers, warpers and slashers by the majority of the mills. It is easily apparent that something should be done about this formidable array of perils embodied in the preparation of the warp yarn.

CONTRIBUTOR No. 4076.

Grinding the Fillet on the Bobbin Cleaning Machine.

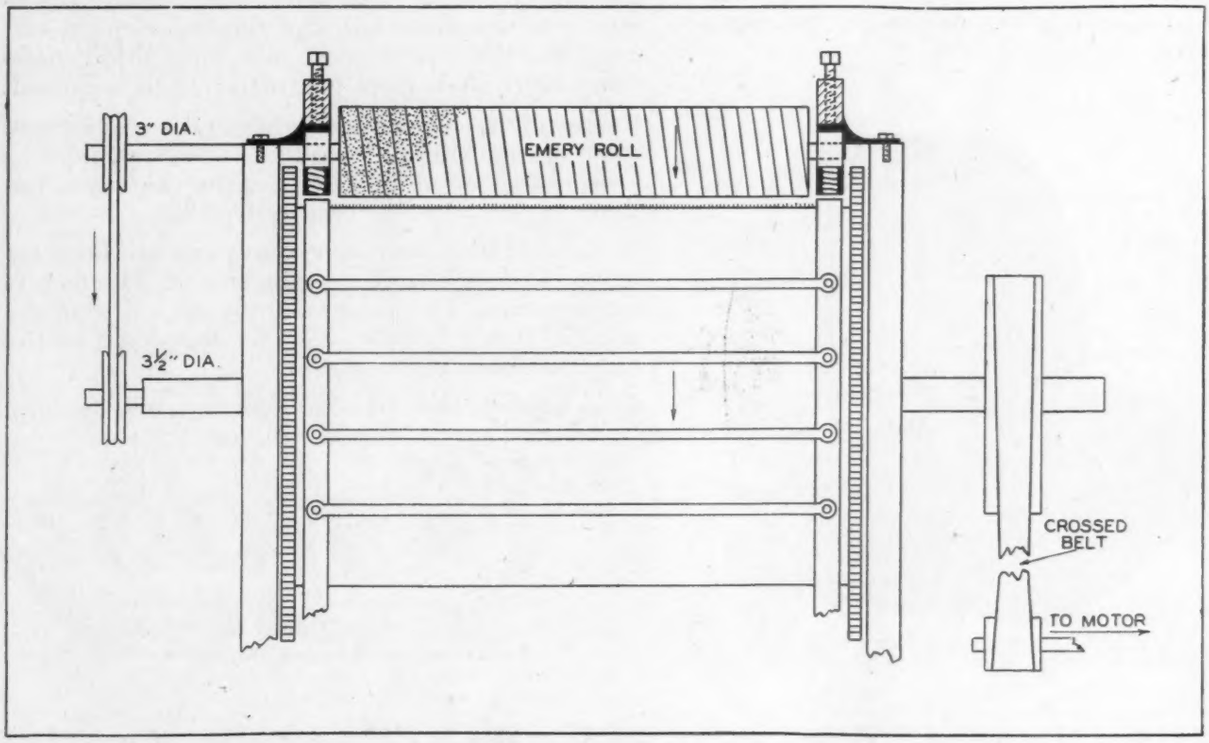
EDITOR COTTON:

Does the fillet on the cylinder of the Termaco bobbin cleaner require periodical grinding? I say yes. I have proved this and also know that by so doing the efficiency of the machine is increased greatly.

I first tried a piece of board with strips of emery fillet glued onto it. This idea was not good enough as an even pressure could not be exerted on the full width of the cylinder. The sense of touch is far from being reliable, especially in this case. I soon arrived at the conclusion that the only way to grind the bobbin cleaner cylinder properly and keep it in good shape is by mechanical means.

Undoubtedly some of our friends will say that grinding is unnecessary, but I think they should take a little more interest in this machine and not condemn it because they are getting "chewed-through" bobbins, which could be avoided if a little sharpening of those wire points was practiced now and then and those tension straps above the bonnet adjusted to a nicety. For the information of the reader, this can be done, and easily too, but I know that as the wire on the cylinder becomes dull, it is noticed probably by the operator, and of course he looks around for a means of overcoming this trouble. Ah! the straps! That's it. Make them a little tighter, and a little more, and then all the waste comes off the bobbin—some of the bobbin too. Why? Simply because instead of a stripping surface of wire acting on the waste on the bobbin, there is a grinding or bobbed surface set too close to the bobbin, whereas, if a little grinding were resorted to in order to obtain that stripping or whipping action, the bobbins would be cleaned properly without even being marked on the surface.

But to attain the aforementioned, as I deem it advisable, is to be in possession of the mechanical means in the shape of a roll covered with the regular emery fillet and also the bearings for same and the whole equipment made portable in order to facilitate grinding; not to resort to the dangerous method which I employed at first. The latter method is not only dangerous, but an evenly-ground surface is never assured, but by means of a roll which can readily be ad-



GRINDER FOR BOBBIN CLEANER.

View from feed side, showing cylinder reversed for grinding. Worm gear on cylinder shaft replaced by pulley. Bobbin carrier gearing disconnected and one bar removed from carrier.

So far as most men know all cakes are made alike ~~~

The ingredients in all cakes are much the same. Yet two women using identical recipes will get different results. Even with specifications the same, the cakes are far from being alike.

Belts, too, made to the same specifications will differ widely in performance. So far as most men know they are all made alike. They should therefore, give equal service. But the experienced belt user, like the experienced cook, knows that something more than good raw materials is required.

Condor Belt—and all high grade belts—conform to strict specifications. Weights of duck and friction tests in two or more belts may be the same, but these cannot foretell their span of life.

In Condor Belt, the component parts are built for aging. They are steeled against Time. The factors are constant. In your own shop you will find the proof. Match Condor—belt for belt—and let the outcome form your opinion.

Like Condor Belt your satisfaction will endure.

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justed evenly for the full width of the wire, assurance of a perfectly ground surface is obtained, and this to my mind is the one thing necessary as an accessory to the bobbin cleaner.

In order to give an idea as to what I am driving at I have made the accompanying sketch of it and will describe it to the best of my ability.

As can be seen in the sketch, the emery roll is mounted by two bearings which are designed to rest on the bobbin carrier and also to be screwed down on the framing on each side of the machine. These two stands or bearings are fitted with brass or bronze sliding boxes, in which the roll revolves and which can be easily adjusted by means of an adjustment screw fitted in the top of the stands and a steel spring which is set under each box.

To perform the operation, the hood or cylinder cover is released and allowed to rest clear of the cylinder. Then one bar is removed from the carrier, side plate on opposite end to driving pulley removed, and the carrier disconnected, by taking the worm or cylinder shaft, and also other gears, in order to make sufficient space for the placing of a 3½-inch pulley on cylinder shaft as shown in the diagram.

After assembling the roll and setting it as it should be, level for the full width, then the driving belt can be reversed and the machine started. Grind for at least one hour every two weeks, lightly of course, and the bobbin cleaners will give satisfaction.

A glance at the sketch will simplify the point, and no doubt some of the readers will see room for modification or improvement. Anyway, this is all I wish to say regarding this matter unless any of the correspondents make an inquiry about any misunderstood item, in which case I will be only too pleased to reply.

One last word for the bobbin cleaner as I have found it, and that is, it deserves a place in any mill where its work is being done by hand, which we know is dangerous as well as involving a loss of time, and regardless of what precautions we take, the help will use their knives and old razor blades when they see a chance.

R. E. T. (R. I.)

Book on Soluble Silicates in Industry.

Soluble Silicates in Industry, is the name of a book recently published by the Chemical Catalog Co., New York. This book was written by James G. Vail, chemical director of the Philadelphia Quartz Co., Philadelphia, Pa. It is well illustrated and thoroughly indexed. It will be observed under the heading Textile in the index, a matter of over 30 entries, covering all sorts of subjects, from the use of silicate in bleaching to the detergent action on wool. There are several entries under the word Cotton, some under the word Silk, some under Bleaching and a great many under the heading Soap. The price of this book is $9.50 per copy.

Cutler-Hammer Moves Atlanta Office.

On December 1st the Atlanta office of the Cutler Hammer Mfg. Company moved into new quarters at 150 Peters Street, S. W., Atlanta, Ga. In addition to sales and engineering service on motor control apparatus and wiring devices, the new location provides warehouse facilities where many types of standard devices will be carried in stock for direct shipment to customers in that territory. A. C. Gibson is manager in charge of the Atlanta office.

Extra service
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Designed for the hardest use there is—for the wear and tear of the textile industry—Rockweave canvas products give extra service in *every* industry. That's why there was a sweeping demand for them from the start. The line was rapidly extended, and now there are Rockweave canvas baskets, trucks and hampers built for every purpose.

Frames of specially tempered spring steel. Top rims bound with chrome leather. Casters, handles, hinges, eyelets, shoes, truck-boards of special design and extra strong. Coverings of our own Triumph Duck, to give longer, harder wear. All of these features are incorporated in designs that have proved the best for the particular service specified. As a result, Rockweave canvas products are in a class by themselves . . . in everything but price. Like all Rockweave products, they are priced right in line with the market.

All standard sizes of baskets, trucks and hampers are carried in stock, ready for immediate shipment. Special sizes to meet your requirements will be made and shipped promptly, at reasonable prices. We have prepared a catalogue with illustrations of the complete Rockweave line and descriptions of its uses. Won't you write for it?

Rockweave Mills

CANVAS PRODUCTS DIVISION
DIVISION CALLAWAY MILLS

LaGrange, Georgia

Individual Reward for Individual Merit

RECENTLY Merle Thorpe in "Nation's Business" ascribed American prosperity to that principle which has been fundamental throughout the political and industrial life of this republic—"Individual reward for individual merit."

We commend Mr. Thorpe's formula to mill and other textile executives who feel that they are not getting their share of the country's present prosperity.

Individual reward for individual merit! Note the emphasis on the word "individual." No generalities, no statistics. No mass of figures on car loadings, crop estimates and commodity prices. Just the definite connection between personal energy, personal vision, personal efficiency and individual success. Throughout our long and intimate connection with the textile industry, we have felt that any drive for increased prosperity throughout the industry must start by fostering the prosperity of the individual mill.

* *

Individual merit brought prosperity to the merchant princes of the nineteenth century—the men who laid the foundation of America's commercial prestige. The great merchants new the solution to their problems—from years of experience and concentration. But their real greatness lay in that, knowing the fundamentals thoroughly, they rose far enough above their merchandise to survey and understand every phase of business. Today, more than ever before, our industry needs merchants with vision rather than order takers or statisticians.

Statistics have their place, of course, but what we need most for prosperity, first as individuals and then as an industry, is the right machinery, properly standardized merchandise and the right distribution. The following incident illustrates our point. We recently luncheoned at a restaurant once famous for its food and for its service. To our surprise and disappointment, the food was poorly cooked and badly served. Complaint to the headwaiter brought out the reason. "In those days we had wonderful cooks and efficient waiters. They always delivered good food well served. Now so much money is spent on efficiency experts and statisticians that we have poor cooks, poor waiters—and complaints."

Good food well served brought individual reward to this restaurant—for a time. Now the law of the survival of the fittest is following its relentless course.

The same condition exists today in many mills. Fundamentals are often lost sight of. Too much attention can be paid to the superstructure and its trimmings and not enough to the foundation—the quality and styling of the fabric.

We are all too apt to think of prosperity in terms of entire industries rather than of individual units. Only the other day, in conversation with a well known commercial banker, we expressed the opinion that department stores, as a whole, are profitable. His answer applies equally well to any branch of the textile industry. "Department stores directed by real merchants are very profitable. But look at the statements of a great many department stores and you will find that they are anything but profitable."

The same condition holds true among the chain stores. Most of them are showing a handsome return. But some have proven flat failures. You will find that the profitable ones are splendidly organized in every minutest detail.

In the textile industry, even in times of serious general depression, certain mills have been outstandingly successful while others have gone to the wall. But the successful ones were the mills in which every department was thoroughly organized to meet changing conditions. They have adopted a flexible unit system of operation which could turn out quickly and economically whatever goods were most in demand. They could always deliver "good food well served."

* *

Consolidations are in the air today. Are they the remedy we need? We do not think so, with the possible exception of mills producing strictly staple fabrics. An analysis of the textile industry shows that the weakness of the industry does not necessarily lie with the well balanced, medium sized mills, but with the larger organizations. Mere size will never make up for lack of efficiency. Wherever style dominates, individual merit, irrespective of size, will always attract attention and turn a profit.

* *

It has always seemed to us that the ideal organization to enable a mill to earn consistent profits is similar to that on board ship. The large investment in brick, mortar, machinery and personnel corresponds to the ship, its engines, and crew. Up on the bridge are the navigators, the sales agents who have charted the sea of commerce, who know the currents of style and take full advantage of them. They can be counted upon to bring their ship into whatever port offers a profitable business trip.

But the finest ship and the best navigators will never make port without an ample supply of power. It is one of the chief functions of a factor to see that the mill is supplied with funds when and as needed in order to operate at maximum efficiency and so earn a profit on the investment.

* *

Our conception of factoring, however, is not confined to the usual financial and credit checking services. There is a more human side to factoring, one which takes into account the personality of the manufacturer as well as his product—one which is founded on faith as well as on fabrics.

We believe that even the checking of credits has its human aspects. In our credit service, for instance, it is not only what we do, but the way we do it that makes our credit department a real aid to your sales department.

Long experience in co-operating with some of the most successful mills in this country has given us a merchant's appreciation of the needs and of the problems of the textile industry. If we are asked to become co-workers in the development of a mill, we can bring to bear upon its problems not only this keen appreciation, but also a creative imagination. Such a combination results in intelligent and profitable development.

Many executives have found it well worth while to take us into their confidence and permit us to discuss their problems frankly with them. This is an opportunity which we welcome. We are always ready and willing to meet executives from any branch of the industry either at their offices or at ours. The same intimate contact is offered to the mill's customers. As co-workers with the mill, we are only too glad to do everything we can to build good will between buyer and seller.

* *

After January 14th, 1929, our offices will be at 51 Madison Avenue. Here we have taken more adequate quarters which will permit expansion and better co-ordination of our various departments, thereby enabling us to render still better service. In planning these new offices, we have tried to express the intimately human side of factoring, as we conceive it.

Morton H. Meinhard & Co.

51 Madison Avenue—(New York Life Building)

New York, N. Y.

ADVERTISEMENT

A Discussion of Even Twist.

EDITOR COTTON:

In response to your request for some discussion on the subject of balanced twist, will say, this reminds me of when I first came to the mill. You see I didn't have the good fortune to have been reared in a mill community. I supposed that I would learn all about a cotton mill in something like three months, but, after ten years, and more, in the mill, I find that I have just begun to learn. No one man can possibly be familiar with the many intricacies in the manufacture of cotton. The very fact that the foremost cotton mill men of the country gather frequently for a discussion of their problems, proves conclusively that they feel there is yet much to learn by any exchange of ideas regarding this great industry.

Should I say that I know all about twist, it would prove at once my ignorance of the subject. But I am glad to relate a few of my experiences along this line and add my little bit to the general discussion of this important subject.

There is little for which the mill man strives harder than even yarn and even twist, and I might say that these two go hand in hand. With even yarn, one will have overcome largely the problems of uneven twist.

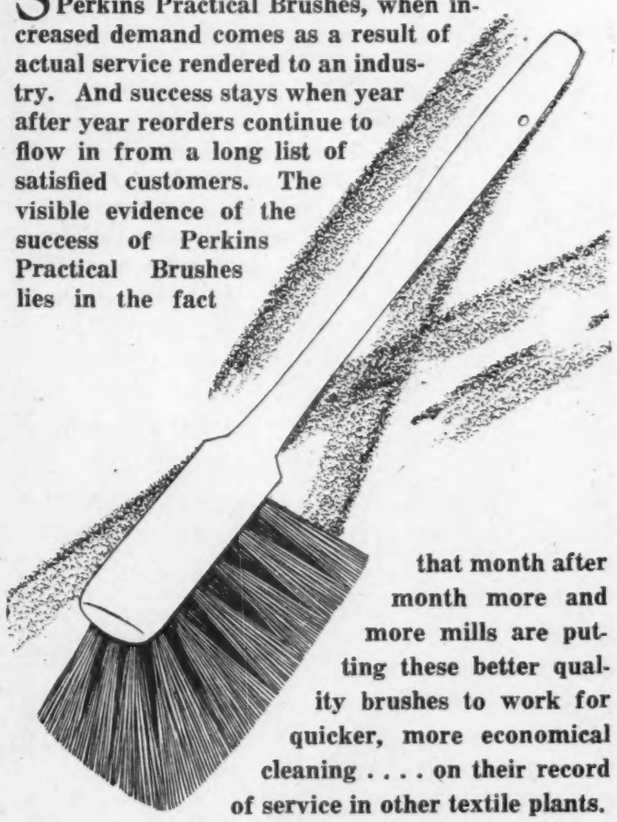
According to the I. C. S. and other rules for figuring twist, dividing the speed of the spindles per minute by the inches of yarn delivered per minute by the front roll, gives the twist per inch being inserted in the yarn. So, if the speed of all the spindles is the same, and each roll delivers exactly the same length of the same size yarn, the twist will be uniform. However, that is perfection, and so far, has never been attained in any of the mills of which the writer has knowledge.

The structure of the cotton fiber is such that it is subject to change under different atmospheric conditions. Again, the fibers are of irregular length, size and structure. There are so many things which can happen to the various machines through which the cotton passes in the mill, causing uneven settings of the different rolls and spindles. Speeds are often irregular, caused by slack belts or bands, improper lubrication, etc. Folks are differently constituted and have different ways of doing things, and in the absence of the proper supervision, things are not always done properly. In general, I would offer the following as an aid toward attaining even yarns and balanced twist.

First is closer cooperation between the mill and the farmer. The farmer should be acquainted with the needs of the mill, and should grow his cotton with these needs in view; planting only improved seed and seeking uniformity of staple and quality. Much has been said recently about the proper ginning of the cotton, and no doubt there is room for much improvement along this line. Even settings of the various parts of the machines; regular speeds, especially of the spindles, come next. Many mills are turning to the tape drive for their spindles in an effort to attain this. These items must be followed up by the men in charge if any improvement is to be expected. Sufficient humidification, evenly distributed, should

In More Mills Every Month

SUCCESS comes to a product, such as Perkins Practical Brushes, when increased demand comes as a result of actual service rendered to an industry. And success stays when year after year reorders continue to flow in from a long list of satisfied customers. The visible evidence of the success of Perkins Practical Brushes lies in the fact



that month after month more and more mills are putting these better quality brushes to work for quicker, more economical cleaning . . . . on their record of service in other textile plants.

There is a range of kinds and sizes in Perkins Practical Brushes to fill every known requirement of the modern textile mill. Each one is guaranteed to deliver perfect satisfaction. Write today for illustrated folders and price lists.

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help, as this tends to prevent the fibers from changing their weight in passing through the various processes, as well as to make the stock work easier. Proper training of the operatives and a close supervision of their work play a great part. The overseer and the second hand should not be tied up with too many detail jobs, but should spend much of their time passing among the help, noting how things are running, giving suggestions, advice and words of encouragement.

I will relate a few experiences regarding twist in plied yarns, that have come under my own observation.

The lengths of nearly all ducks are very important, and twist must be considered when lengths are being figured. In a mill making belting duck, it was the duty of the foreman of the beamer room to order the yarn from the twisting department furnishing the length to take care of the cuts plus a certain per cent for a runout. He was running a certain yarn when he received orders to have a slacker twist put in. This was done, and the same length of yarn that had been running out okeh ran long, when the twist was changed. This taught him to adjust his runout according to the amount of twist in the yarn.

A twister was running on a six-ply seven yarn. One day it began to run out bad in the beamer creel, running out short in spots of about fifty bobbins. The foreman of the twister room, on being called to look at it, decided that someone had mixed some six-ply six yarn with this as it would be about the length of the short yarn that had run out. The next creel of this yarn also ran out like the one before. A close investigation disclosed the fact that the roll gear was stopping occasionally. This stopped the front roll from delivering, but twist was constantly being inserted which caused the yarn to be short on half the frame. The twist on this side was also irregular. A proper supervision of the frame might have prevented this.

A mill having twisters of two different makes was experiencing difficulty in getting the lengths properly adjusted. A capable man was checking the counter on each frame before allowing it to be doffed, yet the runouts continued irregular. Double checking was resorted to in an effort to determine whether the counters were correct. Finally it was discovered that one of the makes of twister was making yarn shorter than the other, in spite of their being the same size and of the same gauge and speed. A close check-up revealed the fact that on account of the gearing of the two frames being different, one make was putting in slightly more twist than the other, causing this yarn to run out shorter than that produced by the other. Careful checking of the twist constants when the different makes were installed would have shown this difference and would have saved the men a lot of worry and the mill quite a bit of money.

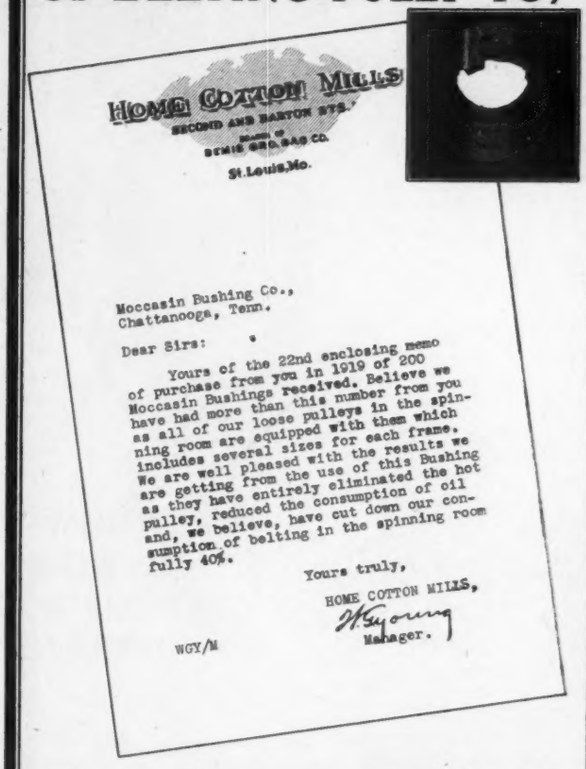
I trust that these few remarks will be of assistance to someone in solving his twist problems.

CONTRIBUTOR NO. 4022.

Carbic Color & Chemical Company Change Offices.

The Carbic Color & Chemical Company, Inc., announce the removal of their offices to the New Industrial Trust Building, room 1026-1026A, Providence, R. I.

MOCCASIN BUSHINGS
"CUT OUR CONSUMPTION OF BELTING FULLY 40%"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Dear Sirs:

Yours of the 22nd enclosing memo of purchase from you in 1919 of 200 Moccasin Bushings received. Believe we have had more than this number from you as all of our loose pulleys in the spinning room are equipped with them which includes several sizes for each frame. We are well pleased with the results we are getting from the use of this Bushing as they have entirely eliminated the hot pulley, reduced the consumption of oil and, we believe, have cut down our consumption of belting in the spinning room fully 40%.

Yours truly,
HOME COTTON MILLS,
Manager.

WGY/M

Notice the advantages listed by this user — "entirely eliminated the hot pulley" — "reduced the consumption of oil" — "cut down our consumption of belting in the spinning room fully 40%."

Unusual bushing performance due to the patented Moccasin Bushing principle. Specially treated white pine plugs carry oil to the bearing surface in a continuous film, eliminating friction.

Our trial order offer will make available to your mill the advantages of Moccasin Oil Distributing Bushings. Write us about it.

HIGHEST GRADE

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Moccasin Bushing Co.

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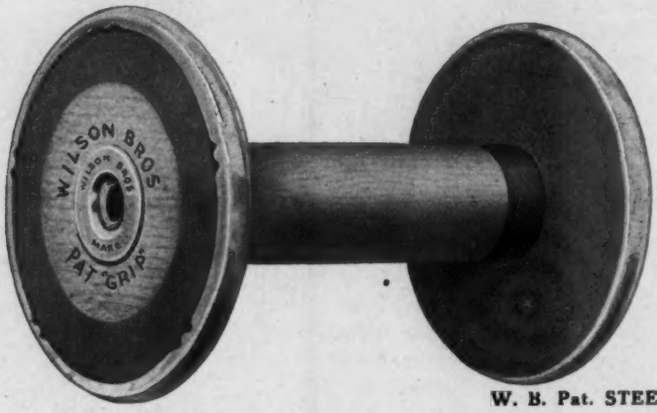

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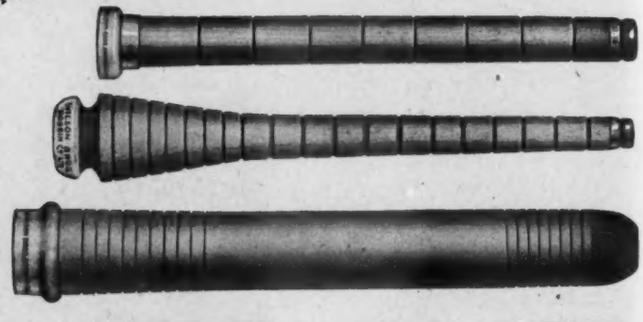

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LIVERPOOL.

Agents **LEIGH & BUTLER,** *Boston, Mass., U. S. A.*

How Should these Goods be Split?

EDITOR COTTON:

One of our customers asks us to have a certain style of 36-inch goods split for him, 20 inches from one selvage, leaving 16 inches for the other part. In making this cloth I will skip several dents at the proper place so as to mark clearly where the cloth is to be split.

I would like to know whether it is better to split the cloth with a knife at the loom by fastening this knife to the breast beam, or whether it is more advantageous to split the cloth in the cloth room. Also, how the splitting is being done.

CONTRIBUTOR No. 4102.

Causes of End of Lap Being Heavy.

EDITOR COTTON:

In reading over the report of the Ala.-Miss.-La. Division of the Southern Textile Association, appearing on page fifteen in the November issue of COTTON, I noticed a question that was put before the meeting that I would like to try to answer. It was asked, "Why are the last two yards of a lap heavier than the rest?"

In my opinion, and it is gained through practical experience, there are two causes for heavy yardage at the beginning of a lap. Notice that I say the *beginning* of the lap, because that is the *end* of a lap when running out at the card. The first condition that will cause this trouble is: when the picker is started the lap is not wound around the lap roll tight enough, then when the pressure is applied on the lap rack, it will fold and crease the cotton on the roll. When the lap is unrolled there will be more than one yard of cotton due to the creasing and folding. The second, and what I think is really the cause of their worry, is the feed roll running after the preceding lap has knocked off and the cages have stopped. This condition is caused by having too much play in the connections between the knock-off and the clutch that drives the feed roll. The clutch should be made to drop out of connection at the same time the knock-off lever drops.

If the clutch does not drop out when the knock-off drops the feed roll will continue to feed cotton to the cages that stopped at the same time the knock-off dropped. This will cause more cotton to be between the feed rolls and cages and naturally make the lap heavier. The first yard, or yard and a half, will weigh correctly as this distance had already passed through the cages when the picker stopped. The lap will continue to run heavy until the surplus fed in when the cages were stopped has passed through. The length of the heavy lap is governed by the strength of the air current. If the air current is strong it will make a shorter length of heavy lap than if the air current is weak.

CONTRIBUTOR No. 4118.

"Sirco Unit Heater Catalog No. 7418."

The American Blower Corporation, Detroit, Michigan, announces the publication of an illustrated booklet describing Sirocco Unit Heaters. This booklet gives the specifications of the various units and explains the application of them to the modern industrial plant.

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What Causes the Soft Places?

EDITOR COTTON:

I am spinning 8s and 9s hosiery yarn, from 2.00-hank roving made from 7/8-inch cotton, using a twist multiple of 3.25 and a 2-inch ring. My front roll speed is 188 r.p.m.

I find that I have soft places in the yarn. The knitter says that the yarn will pull in two at the soft places. I shall appreciate any suggestions from mill men as to what may be causing this trouble.

C. J. L. (TENN.)

The Qualifications of an Overseer.

EDITOR COTTON:

Having read so many articles in COTTON as to the qualifications of overseers, I feel that a few lines from me, added to the splendid advice already given, might be very timely.

It has been my privilege in the past twenty years to have been associated with several corporations in capacities leading up to, and including, managerial positions. Some of the mills were very prosperous even during the slump year; other mills were not so prosperous. However, observation of the men in charge of these several plants showed positively that where cooperation of the management and the help existed, prosperity was in evidence.

The human element is apparently the greatest factor toward success, or only partial success of a plant. I know of, and have seen, conditions where overseers resented advice from a superior because they considered that they alone understood their particular department. They lost sight of the fact that their superior must have shown, and proven, some exceptional ability in the knowledge of manufacture, otherwise, he would not have held his position.

Also, one will observe that where an overseer refuses to take an interest, or lacks interest in cooperating with the management in general, the help under him sense this condition. The result is, that their incentive to cooperate with their overseer is killed. He refuses to lead the way and the help have no one to follow. This is very costly to a mill employing such a person. I know personally of a condition of this kind where the cost of 60s warp yarn went up one cent a pound through absolute negligence. Having seen such conditions, I will advise all men who have been entrusted with important positions, whether superintendent, overseer or second hand, to give of their best and be willing to learn all they can of the other fellow's job, and to cooperate with any new idea which may be offered. Also, they should try to realize that thousands of dollars belonging to people they may never know or see, are entrusted to them to use to the best advantage of the stockholder and the employees.

Again, consider the wages one earns. If an overseer, his wages might range from thirty dollars to fifty dollars per week. (In the last instance, fifty dollars per week amounts to $2,600.00 per year, equal to an investment of $43,333.00 at six per cent interest.) This fact should be considered and the importance realized, and the overseer should step out and take the lead, then those whom he has in charge will give him better service and they will have confidence in him. His superiors will also have confidence in him and will trust him. He will be a happier man, and knowing that he is trusted, he will have more confidence in himself. His outlook will be broader and he will realize that he is just beginning to learn, and if a Christian influence emanates from him to his associates, his success will be assured.

CHRISTY (MASS.)

Good Advice for the Future Overseer.

EDITOR COTTON:

I wish all young men who are starting out to run a section in a cotton mill would read the following suggestions which are addressed directly to them:

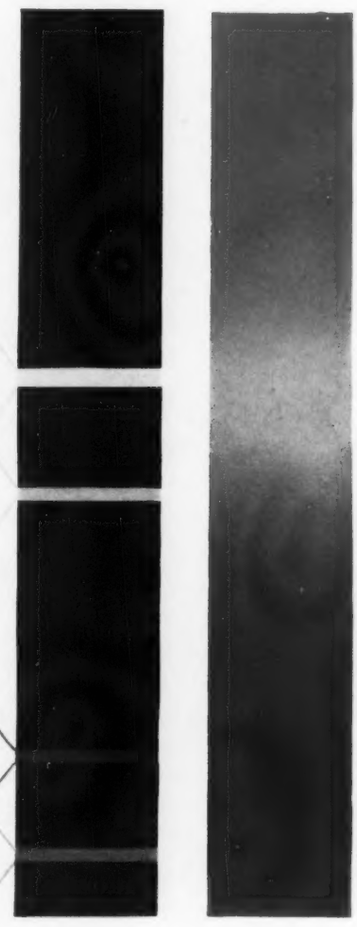
Young man, much is expected of you, and you may as well know it right now. Even the superintendent is depending on you. He is holding the overseer responsible, of course, but he is watching you, if you are a section man or a second hand. He is thinking of the time when his overseer will go away to some other job, or, the overseer may be promoted. At any rate his job will have to be filled by another some day, and I am sure you should at least take one step up. You may think you will, but there is one who knows, and that is the superintendent, though you may think he doesn't pay much attention to you. Anyway, I would not swear that he is not thinking about you when you are asleep. I have known of such cases.

What are you doing to gain the confidence of this man? Are you trying to fool him into thinking that you are a good section man, or a good second hand? If you are, just stop right where you are and quit your job, or stop trying to fool him, for you can't do it. Neither can you fool the overseer.

I am going to try, as best I can, to tell you a few things which I believe will be of help to you, if you will do them, but let me say in the beginning that I cannot tell you everything, for I do not know it myself. I want to ask you a question, and I hope you will be honest in answering it. Did you go to the mill this morning not later than a half hour before starting time, or did you get there just in time to see the lights flash? And then at changing time this afternoon, did you jump out the door just as soon as the lights flashed and strike it out home? If you did either, or both, there is no use of your reading farther, unless you are willing to make a new start right now. If so, just say to yourself: "I, for one, am going to be on the job at least twenty minutes before changing so that I can see how everything is going today, and be ready to place my help when the lights flash." Will you do it? If you will determine in your mind to do this, you will notice in a very few months that you have improved. Get interested in your work and you will like it. The small things that go on in the room are really large things—you have just thought that they were small—they will look like mountains, and you will take steps to correct them.

Yesterday you walked through the room. Doubtless you noticed three or four spinners together talking. You saw some ends down; not many, just two or

Do you know *why* COOPER HEWITT LIGHT *is better than daylight?*



Cooper Hewitt Spectrum

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Since cool yellow and green, the best *seeing* rays known to science, constitute 90% of Cooper Hewitt light, workers do more and better work under this kind of illumination.

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MANY facts are learned by separating lights of different kinds into their respective colors and examining the "spectra" thus obtained. The daylight and the Cooper Hewitt spectra, roughly reproduced above, show the colors present in each, but not their relative proportions or intensities.

Note, however, that red and orange are the colors which predominate in daylight. These are the very colors that are most productive of heat, glare and irritation in the eye, though decidedly low in visibility.

Contrast this with the Cooper Hewitt spectrum. It contains 90% yellow and green, the *best* seeing rays and the *least* irritating to the eye.— Only the glowing *gas* of mercury vapor produces this spectrum.

It is chiefly this high proportion of yellow and green and the absence of red and orange which make Cooper Hewitt light better than daylight. But other important reasons are explained in Brief No. 4. Send for your free copy. Cooper Hewitt Electric Company, Hoboken, N. J.

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Seeing power counts in this weave shed—

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Cooper Hewitts are better than daylight not only because they give constant intensity 24 hours a day but because they yield 90% yellow-green (the best seeing) rays, and have none of the glare-producing qualities which are hard on the eyes. As a result, every detail becomes sharp and clear as if magnified, vision is more acute and the response of brain and hand is more rapid.

CAN you guess how large an investment is involved in a fully equipped weave shed such as that of the American Silk Mills, Inc., pictured above? It would be folly indeed to have anything but the best lighting system here. Yet daylight is a secondary consideration. Reliance is placed where it belongs in the dependable seeing power afforded by Cooper Hewitt lights.

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three. Did you call on them to put them up, or did you pass them up just because there were not many down? If you did, you made a mistake. You should watch your spinners closely, and let them know you are watching them. Do your spinners drop white cotton on the floor? If so, stop it; or if they are cutting off roving, stop them. If they drop bobbins on the floor, stop it. Stop everything that is not right in the room.

Of course the overseer must be willing to back you up in what you do in the way of having the help do things, but he will, and will help you too, if you will show him that you mean business.

You should be very careful as to how you speak to an employee. You can remember when you were a boy and how you liked your section man or head doffer to talk to you, and you could tell as well as a grown-up when you were insulted, and you can also remember when the head doffer did not go out of his way to insult you, but instead, talked to you like you were a little man, and how you admired him and gladly did what he asked you to do! Remember that those little doffers and spinners on your section are just like you and I used to be, just the very same; that's why I say you will have to be very careful as to how you handle them, for that is one of the important things in running a section, room or mill.

But getting back now to the place where we started; you will have to work hard, sometimes over time, and study hard, for success comes only through hard work and study. You may as well determine now, before going any farther into the mill business, as to whether or not you are willing to work. If you are, there is a chance, a great chance for you in the mill business, but if you are not willing to work and study, there is absolutely no chance for you.

CONTRIBUTOR NO. 4020.

Waste Figures on Belting Duck.

EDITOR COTTON:

In reply to the inquiry of "CONTRIBUTOR NO. 4059", who wants some information about filling waste made on specified weights of belting ducks, will say that I am glad to furnish what data I have been able to secure on this subject. By way of parenthesis, I might say that we are not particularly proud of our own record in this connection, as we feel that we ought to be doing better than we are.

In working up the system of controlling filling waste in our mill we did not exactly take into consideration the weight of the fabric, but rather the weight of the filling, as we have other goods than belting that would use the same weight filling, but the weight basis is different. However, to answer the inquiry definitely I have taken the average fillings usually run in each of the three weights of belting ducks mentioned, namely; 28-ounce, 32-ounce and 36-ounce. The figures I am giving are based on the width of the goods being fifty inches and on a ten-hour run.

For the 28-ounce belting we allow 39 ounces of waste, for the 32-ounce we allow 44 ounces of waste and for 36-ounce an allowance of 57 ounces of waste is made. The weavers are fined one cent an ounce for all waste made in excess of the above allowances. The waste is weighed each morning, the waste man having each man's standard based on the kinds of filling he is running.

In securing the average against which to work it is necessary to know the probable number of filling changes, i.e., shuttle changes, that the weaver will have to make during the day and the amount of filling that will be left, ordinarily, on the cop. The number of changes will, of course, be dependent upon the length of filling, the number of short pieces that the filling contains and the speed of the loom. The amount to be left on the cop will depend upon the care taken in winding the filling, the number of looms the weaver has to watch and the human element; one man will run his filling down closer than another, and of course an average condition must be taken for a working basis.

CONTRIBUTOR NO. 4022.

Preventing Chain Warps Locking at Beamer.

EDITOR COTTON:

Referring to the question of "CONTRIBUTOR NO. 4056," appearing in the September issue, as to what causes long chain warps to roll and lock at beamer. I will give a few of the things that may be causing this trouble.

What old beamers call a locked chain, is where a warp end drops down and falls through the lease string; the end has to be loose to do this. This sort of accident is hardly ever noticed until the warp is laid in and the beamer gets started, but a man of experience can tell at a glance how to take the fall-through out. This is done by slacking up the chain and pulling a yard or so of the chain back the way it fell. Then tie a white string around all the warp where the put-through end is; then take the weights off the tension drums; leave a man back of the beam while another pulls the warp back onto the pile until the white string comes up; then put the whole bundle of warp through the same place as the loop entered and it will be found that the warp will be as straight as ever.

Warps that roll in lumps, or are stringy, when coming up on the top layer at the beamer, are sometimes caused from going in loose at boiling out box and having too much steam. We call this kind of warp "blown." These warps are very bad when no spiral string is used.

I have seen good warps spoiled on drying cans because of a very small defect on the bar guides, pins, rollers, etc., this will split the yarn or separate it from its original warp condensed shape. This will make it come up in strings or sections at the beamer. Any warp to beam good must retain the correct condensed form that it had when it left the warper after it has been boiled out, dyed and dried.

If "CONTRIBUTOR NO. 4056" is having such trouble as buttoning up in twos or threes at the comb for about twelve to fifteen inches on each side of the framer comb; then his trouble is at the warper. The writer experienced just such a trouble at one mill where the spinner had charge of the warping. We

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The bearings of the TOLHURST Center Slung are in positive alignment through assembly in one dirt-proof, grease-packed housing with lubrication from a single source. There can be no difficulty with TOLHURST bearings nor with their lubrication.

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found that the return roller was too near the warper and this caused the ends for about twelve inches on each side to cling in twos while going on the ball. These outside threads rode partly over each other and caused delay at the beamer.

I would suggest that he look very carefully over the warping in all details, also, the boiling out, dyeing and drying.

CONTRIBUTOR No. 4283.

EDITOR COTTON:

I note the letter in which "CONTRIBUTOR No. 4056" asks for a solution to the trouble he is having with chain warps rolling or locking.

In my experience, this trouble is usually caused by a part of the yarn getting slack and falling through or around the other part of the warp. This is frequently caused where the threads are being brought together into a warp strand from a wide spread in the reed through which the yarn is run. This can be sometimes overcome by the proper curvature of a half circle or bend over which the yarn is run to condense into a warp chain.

In the case of this particular difficulty, however, it seems this man is using warps from two different plants, and the trouble begins and ends periodically regardless, and this would indicate the trouble is caused elsewhere than at the warpers. The next most likely place to cause this would be in the boiling out of the warps preparatory for the dyeing. There is quite an agitation at this point, and any slackness in the yarn, whether a part or the whole, will have a tendency to mat, roll or twist together. No slackness should be allowed in the warps while in the boiling-out vat.

The fault probably would not exist if the warp had a wrapping thread around it, but this practice is not so much in use at the present time. Had the method of warping been known, it would have helped some in locating the cause of the trouble. I would be glad to have this man later express his views after he determines what causes his difficulty.

CONTRIBUTOR No. 4058.

EDITOR COTTON:

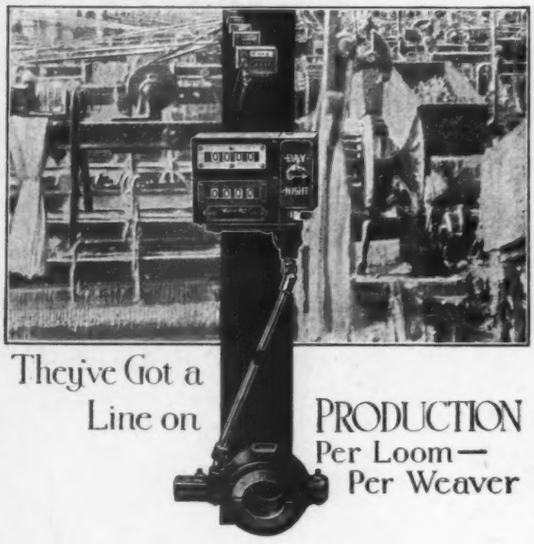
I note that "CONTRIBUTOR No. 4056" is having trouble with long chain warps rolling or locking and giving trouble at the beamer. I have in the past experienced similar trouble and have found that when the following causes have been eliminated everything is okeh.

First, too much steam pressure in the boiling-out box. This excessive pressure goes against the chains of yarn and has a tendency to cause them to roll over and roll together and will invariably cause trouble at the beamer.

Second, uneven drying at the dry cans. If the yarn is not thoroughly and evenly dried, the warps will not spread and separate properly at the beamer.

Third, too much hydrosulphite in the vat. This will cause the strands or ends to stick together, and can be detected by recurrence through the chain of white places and specks.

E. G. (ALA.)



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A Proven Yarn for Every Purpose

An Overseer Speaks Up Frankly.

EDITOR COTTON:

There are several textile papers which come to my desk, and in reading them over, I notice that from time to time advice is sought from the readers on some subject, such as this:

The superintendent has an opening for an overseer; he has two men, one a college man and one a practical man, who deserve promotion. Which shall it be?

Now there is a question which I should like to ask, and that is, what are we going to do with our overseer who is down and out. I know just what the fellows are saying right now: "Your brother overseer should have run his job differently and he would not be seeking one now."

How often, in the life of an overseer, has the time come, if he could have found the boss at that moment, when things were not going right and he felt that the world had turned against him, he would have told him to pay him up, that he did not want the job. We have a good many men out of positions who come to us every day seeking employment. They are not asking for overseers' jobs. All they want is some kind of employment.

Please pardon me for speaking the truth, but some of us fellows are afraid to hire an overseer and put him on a section. Why? Is he not practical? That is not the question. Some of us know that there are things on our job that he will be sure to see, and he might tell the boss.

I know a young man who is overseer today and he would not like for me to pat him on the back for it, but he has worked fourteen boss carders and one ex-superintendent in the past eighteen months, and that is not the half of it. He has now in his employ five section men who are ex-boss carders. This same young man has handled some of the largest overseers' jobs in the South, and twice in his career as overseer he has quit his job and walked off and left it like a hitching-post. He went to several overseers, those who had always claimed to be his friend, and asked for a job as section or second hand. They refused him a job when he needed one and they needed a man. But this young chap has learned better than to walk away and quit a job when things don't go to suit him.

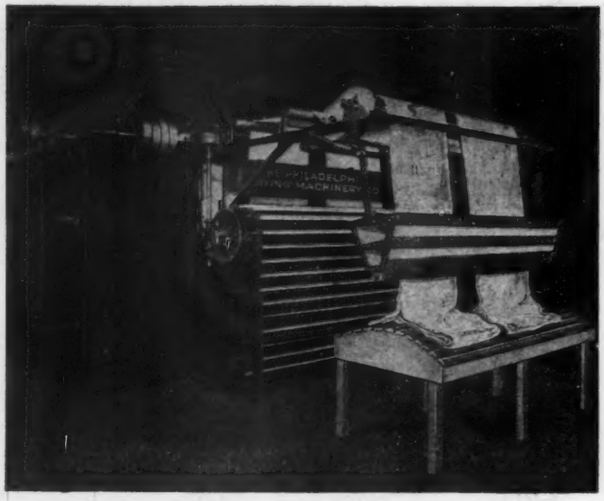
CONTRIBUTOR NO. 4063.

More Equipment for N. C. State College.

The Leesona winder, which was exhibited by the Universal Winding Co., Pawtucket, R. I., at the Greenville textile exposition, has been installed in the textile school of the North Carolina State College, Raleigh, N. C. The mechanism on this machine has been arranged for coning, tubing and doubling. The textile school has also received from the American Moistening Company, Providence, R. I. one of their latest Amtex humidifiers, which has been installed in one of the research laboratories of the school.

Addition to Taylor Instrument Staff.

C. E. George, for many years western manager of the American Schaeffer & Bundenberg Corp., has recently joined the sales staff of the Taylor Instrument Companies, Rochester, N. Y. He will be associated with the Chicago office of the company with headquarters at 58 Washington Street, Chicago, Ill.



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Remedy for Split Laps on Whitin Combers.

EDITOR COTTON:

In a recent issue of COTTON I notice the inquiry of "CONTRIBUTOR NO. 4049" as to the cause of split laps in the Whitin comber, which has interested me, and I hope that I can be of some assistance to him in solving this difficulty.

My experience has been that most laps begin to split at either end and gradually work across the lap. This can be caused by the selvage guides being improperly set on the ribbon lapper, thereby making a poor selvage. The guides at the back of the ribbon should be set as wide as possible so that they just touch the selvage of the lap from the sliver lapper and the lap roll guides should be set so that the lap runs through the center of the roll in each head, and not more to one side than the other.

The guides on the ribbon lap table should be set to just barely turn the edge of the lap from each head and then the guides to the lap roll should be set so that they point to a distance about 1/16-inch inside the side lap discs. So much for selvage guides.

Another cause of this same trouble could be that the lap rolls are old and worn so that their length is only equal to the width of the drums in the ribbon lap. This will cause the selvage of the lap to be ground and plucked between the disc and drum, which will cause splitting. To remedy this, I would recommend having the drums turned down in width so there will be at least 1/16-inch of play on either side of the spool when the rack is down to its lowest point. Care should also be taken to see that the racks are kept level.

I should like to hear how "CONTRIBUTOR NO. 4049" makes out with his laps.

CONTRIBUTOR NO. 4095.

Proper Friction on Ball Warps.

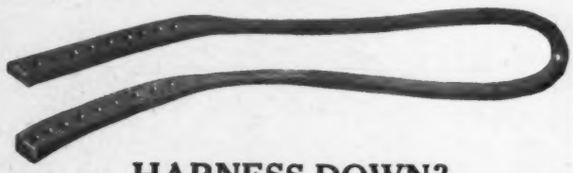
EDITOR COTTON:

I would like to offer a suggestion on how to make a ball warper build warps that are even on the ends. We had some trouble with the beams on our warpers bulging out on the ends as shown in Fig. 1. The warps are made of coarse yarns, from 29s/2 to 38s/2, and run on Entwistle warp machines.

The thing that I would suggest first is that good beams be selected to run the warps on. Good beams are essential in making good warps. Some beams are shorter than others and require washers at the ends to take out the play. The best washer to use is one made out of leather. When the beam is short enough to require washers, be sure that enough are put on before the machine is started to keep the beam from slipping from left to right on the pin.

Next I would take the friction weights off and have thumbscrews put in them. When starting a warp, move the friction weights out to the end of the friction lever. Always be sure that the weights are not resting on the floor.

In running a warp 6,000 yards long the first 500 yards are run with the weight at the end of the friction lever. The weight is then moved up half-way



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Reg. Pat. Off.
HARNESS STRAPS

Made From the Original and Only Genuine Leather With the Hair On Specially Tanned Hides

BONDARON Leather is produced by a special tanning process which gives it longer life, no stretch, greater tensile strength, leaves the hair intact and preserves the fibres of the leather.

Comparative tests have shown BONDARON to be the best leather obtainable for Harness Straps. The special tanning process applied is a secret one, not used in any other tannery, and gives BONDARON tremendous strength and resiliency.

Conclusive Proof

After making comparative tests with every kind of Harness Straps known, one of the largest weaving mills in the South placed an order for 70,000 BONDARON Harness Straps because the test proved that BONDARON gives much longer wear and practically eliminates the report of "Harness Down" and the costly stoppage of looms, loom fixer's time, loss of production, seconds in cloth, etc.

Reduces Operating Costs

What other large mills have saved by using BONDARON Harness Straps, you can save.

BONDARON Harness Straps will outwear three to five of the ordinary kind and do far better work.

Figured on a yearly basis, this represents a considerable saving.

Can you afford to overlook this saving? It means more profit for you by cutting operating costs to the minimum.

Send for a sample or trial order, place them on your loom and watch results.

Our booklet, No. 101 is yours for the asking. May we send it?

CHARLES Bond COMPANY
Leather Curriers and Manufacturers of Belting and Textile Leathers
617 Arch St., Phila., Pa.

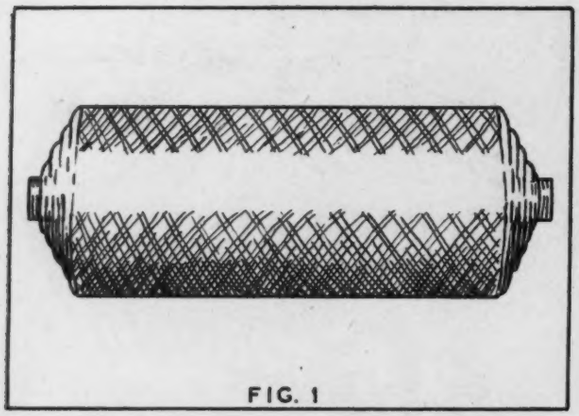

FIG. 1

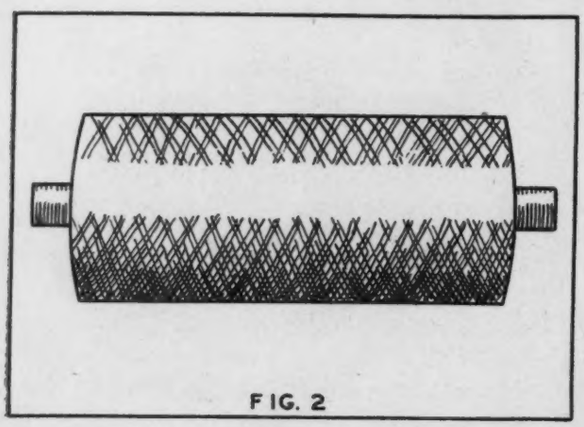

FIG. 2

on the friction bar and allowed to remain there until the clock registers 2,500 yards, then the weight is moved up as far as it will go.

I have found this to be the correct friction for running warps of this number. When the yard clock shows 6,000 yards the warps will be built up straight on each end as shown in Fig. 2.

MACK (N. C.)

Y. C. of A. & Rottenburg Form Association.

Rottenburg Sons Co., Inc., 564 Broadway, New York City, one of the outstanding distributors in the rayon and worsted yarn fields, has purchased a large interest in the Yarns Corporation of America, which is recognized as one of the largest of its kind in this country, dealing exclusively in the entire range of rayon yarns, processing and distributing the same from the natural skein to the following forms: cones, tubes, cops, twist, shiffli, warp beams, etc., both natural and dyed. The company operates four plants, located in New York, N. Y., Brooklyn, N. Y., Allentown, Pa., and Spartanburg, S. C. It is understood that new quarters will be secured in the silk district, which will be occupied by both firms, while the two companies will operate as separate units.

Ralph E. Loper & Company Move Offices.

Ralph E. Loper & Co., industrial engineers and specialists in textile cost service, are again located in the Buffington Building, Purchase Street, Fall River, Mass. The great fire that visited Fall River in February of this year forced Mr. Loper and his associates to take temporary offices for several months.

New Booklet by Houghton Company.

"Houghto-Clean" is the name of a booklet published by the E. F. Houghton & Company, Philadelphia, Pa. This booklet is a brief outline describing the use of Houghto-Clean materials for general cleaning.

Has Artificial Cotton Arrived?

CONSIDERABLE interest is being taken in London and elsewhere in the future of the English Artificial Cotton Production and Marketing Corporation and the artificial cotton it is able to produce. This raw material is obtained from a plant that will grow on even the poorest soil in the southeast of England and it is reported that tests made in this culture during 1928 have been most successful. 1929 will find arrangements made to grow it on such a scale that the Corporation hopes to produce up to four million pounds of fiber that can be used by the spinners before the year is out and to increase in the following year to a figure of about twelve million pounds. Within three years it is anticipated that the Corporation will be able to put on the market sufficient of the fiber to satisfy over half the demand of the Lancashire cotton industry for coarse counts, according to notices.

This artificial cotton is reported to be quite as durable as the real thing, and as tensile, while it can be supplied to the mills at twelve cents the pound.

The plant grows to a height of five feet and more, and is also of interest to other industries than the textile, by reason first of its leaves—from which suitable wood-pulp for paper-making can be produced—and, secondly, of its pith—which can be pulped and used as a molded composition for containers and for other industrial purposes. These valuable subsidiary products will assist materially in keeping the cost of the textile fiber at a low level.

The fiber is produced from the stem of the plant, a process which occupies from two to three hours. Its use was discovered in quite an accidental manner. Some Englishmen were prospecting in South America a few years ago and their attention was attracted one day by a curious bird's nest that seemed to be composed of cotton fiber. Thinking that such material might possibly have a commercial value they decided to find out where the nesting material came from. Eventually the plant from which the bird obtained the material was discovered and, as it was growing under climatic conditions corresponding to those existing in England, seeds were collected and taken home for a growing test. This test was successful and cultivation has now been carried on for several years on an increasing scale, though those interested in the experiments have not courted publicity.

Existing cotton machinery is quite suitable for treating the fiber, it is stated. It can be spun, woven, bleached, dyed, and printed exactly in the same way as cotton. Equally with the latter it can also be blended with wool, silk, or artificial silk.

Interesting Figures on Cotton Dress Goods.

The following figures were brought to light at the Joint Style Conference sponsored by The Cotton-Textile Institute and the National Association of Manufacturers of Cotton Dresses.

a. Sales of cotton dresses retailing from $.95 to $4.95 increased 31 per cent over 1927.

b. Thirty per cent of the cotton dress manufacturers reported increased demand for higher priced dresses.

c. Forty per cent of the manufacturers expressed interest in possibilities of cotton dresses to retail from $5.00 to $25.00.

THE NEWPORT COLORS

New!

include

The greenest direct black available. It is

Newport Direct Black 3 G

and it produces rich, bright blacks that can be *discharged completely.*

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REG U.S. PAT. OFF.
"COAL TO DYESTUFF"

Newport Chemical Works, Inc.

Passaic, New Jersey

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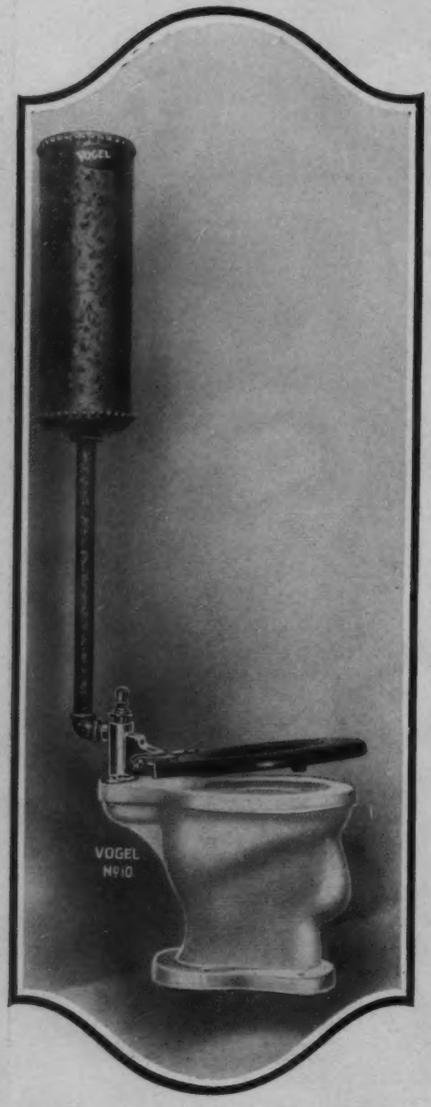
Particularly Adapted to Factories and Plants



Weight on the seat causes the tank to fill. Raising the seat gives a forceful positive flush.

VOGEL PATENTED *Seat-Action Closet Combination*

FACTORY and school closets receive more use and abuse than anything in the plant or school. Repairing ordinarily is a disagreeable job. When Vogel Number Ten Closets are used, the need of frequent repairs is eliminated.

The mechanism of the Vogel Number Ten is simple—Nothing to wear out or get out of order. An example of this is seen in a test which we conducted, opening and closing the valve 150,000 times at the rate of 65 times per minute. At the finish of this strenuous test the valve, the only wearing part of the Vogel Number Ten, was as good as new. There was not the slightest sign of wear.

We have a folder that shows all of the mechanical details of the Vogel Number Ten. We shall be glad to send this folder promptly and at the same time, if you wish, we will send information about Vogel Frost Proof Closets for mill villages and all other exposed places—positively guaranteed against freezing.

JOSEPH A. VOGEL CO.
Office and Factory at
WILMINGTON, DEL.

VOGEL PATENTED *Closets*

Rayon, the Textile Prodigy

(*Continued from page* 267.)

not at least experimented with this new fiber and for many it has been a saving grace.

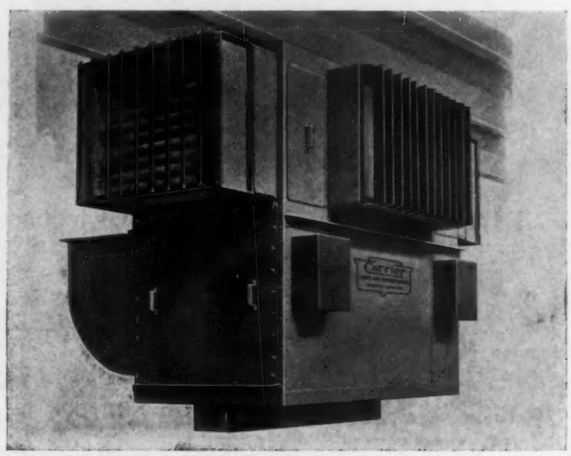
When it comes to the weaving of fine all-rayons, however, there are a few silk mills—some five or six—in the North which have taken the lead. It is for others to follow. Duplan's DuRay Crepe is today nearly as familiar a trade expression as Mallinson's Pussy Willow Taffeta.

The shadow or transparent velvet business has reached a new "high" in 1928. This fabric is made with a rayon pile yarn, usually 100 denier, and with a raw silk organzine ground and filling. In the case of this fabric it has not been a question of making a less expensive substitute for an all-silk construction, but of offering a superior article to anything yet produced. The rayon pile has been found to have unique characteristics not obtainable with raw silk. This is one of the many indications that rayon will soon stand solidly on its own merits and not be considered as a substitute for something else.

It is going to take an elaborate and well-considered campaign to educate the buying public, especially the feminine portion of it, into believing that rayon has overcome its original defects. There are still many women who remember unfortunate earlier experiences and they must be urged to try again and find out for themselves how far rayon has progressed.

Cotton may be King and Silk the Queen of Textiles, but Rayon closely resembles the Crown Prince that is impatiently awaiting accession to the throne.

Suspended Carrier Unit Conditioner



On page 854 of the June issue of COTTON, an item appeared describing the new unit air conditioner developed by the Carrier Engineering Corp., Newark, N. J. To the company's line of this equipment has been added a suspended unit, a photograph of which is shown above. This suspended unit was designed especially to meet the requirements of the crowded textile mill or other plant; it occupies no floor space, being suspended, and has a capacity of 10,000 cubic feet of conditioned air per minute. The fans and centrijector spray system require four horse-power to operate them. The unit provides wide and adjustable distribution of air, the company states; it heats, humidifies, and cleans.

ATLANTA SHEET METAL WORKS
Atlanta, Georgia
Sheet Metal Products for Industrial Plants

ATLANTA STOCK

STEEL SHEETS
Blue Annealed
Black and Galvanized
No. 10 Ga. to No. 28 Ga.

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No. 10 Ga. to No. 32 Ga.

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10 oz. to 48 oz.

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36" x 84". Also 20" rolls.

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Above in standard stock sizes or cut and formed to order

ATLANTA SHEET METAL WKS.
ATLANTA
"SHEET METAL PRODUCTS FOR INDUSTRIAL PLANTS"

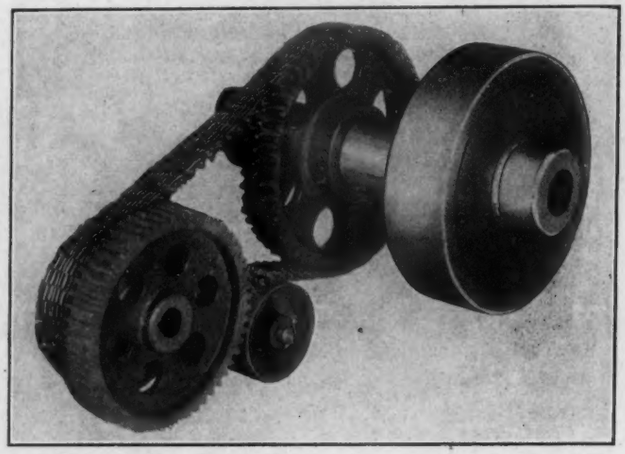
More Power at Less Cost

Owing to the 30 to 50 per cent reduction in load on the cone belt and the reduction of friction to a minimum, the Stewart Compound for Roving Frames has shown, under actual test, a 10 per cent saving in power required to drive the frame.

Its sturdy construction has given it longer life with lower repair expense than any other compound used heretofore.

Our efficient production methods enables us to make surprisingly low prices and our faith in this unit places us in position to make a most attractive six months' trial offer.

Write us for more detailed information.



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204 South Avon St., Gastonia, N. C.
Manufacturers of
Cut Gears, Bevel Gears, Spiral Gears, Rawhide Gears, Bakelite Gears, Spur and Worm Gears.

STEWART COMPOUND
for
ROVING FRAMES
With Chain Drive

Far Ahead - -

Gastonia Brushes led the way for *quality* in the field of textile brushes. They have kept their lead through the manufacturing skill and experience of a company which has been making textile brushes for a great number of years.

Mill hands class Gastonia Brushes as favorites, because of the convenience the designs permit; mill managements like them too, for their unusual lasting qualities.

Gastonia Brush Co.
Gastonia N. C.

MICHAEL & BIVENS, INC.
Electrical Engineers and Contractors
Textile and Municipal Plants
Expert Motor and Transformer Rewinding
GASTONIA, N. C.

FERGUSON GEAR CO.
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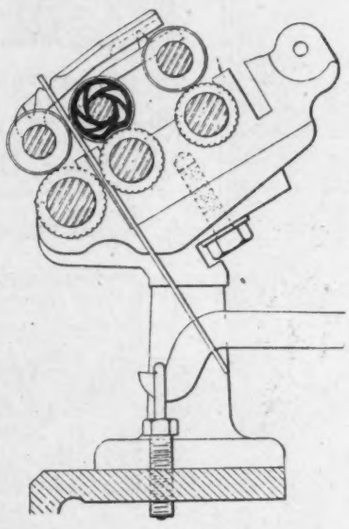
RAWHIDE BAKELITE AND HARDENED STEEL PINIONS
Member American Gear Manufacturers Association
GASTONIA, NORTH CAROLINA

CERTAINTY HAS CREATED PREFERENCE FOR
PARKER BELTING
and TEXTILE LEATHERS
Parker Belting Co., Gastonia, N. C.

A New Form of "Long Draft"

A NEW and novel form of securing longer drafts on spinning and roving frames is being marketed by The Belger Company, Newton, Mass. One feature emphasized is its simplicity, in that it consists entirely of a specially designed middle top roll, known as the Elastix roller, which is applied in the manner shown in the accompanying illustration. The roll is constructed of cellular rubber, the outside being a soft, pliable leather cot, as is used with the standard leather covered top roll. The illustration shows clearly that this roll laps over the surface of the middle fluted roll for approximately ½-inch, bringing the bite ¼-inch nearer the front roller. Only slight pressure is required to flatten the elastic roller to a "balloon tire" contact. Thus, it is explained, a substantial break draft is secured, and, after the fibers are relieved of the twist, there is a slip draft with the bite nearer the front roll as stated. It is pointed out that the average staple of cotton is held firmly, and, owing to the reduced measurement of the bite between the rollers, the shorter stock is held while the few longer fibers slip through.



The Elastix roller applied to three-line leather-covered rolls, weighted by stirrup and lever arrangement.

New England Mill Situation

(*Continued from page 276.*)

it to their advantage to re-condition them and operate them as in the case of the Edwards, Androscoggin, and other northern New England mills that were purchased by similar interests. The Merrimack Mfg. Co., of Lowell, Mass., is reconditioning some of the property it bought from the Tremont & Suffolk mills. The Pepperell mills have abandoned their Lowell plant, bought from the Massachusetts mills, and are removing the blanket machinery to Biddeford, Me., where their other plants are located and where they are now turning out crib blankets and other heavy napped goods specialties.

Amoskeag Doing Better.

The Amoskeag Manufacturing Company is pulling out of its difficulties slowly but is operating a very small part of its machinery on goods of gingham construction. It is producing union huck towels, tickings, both plain and fancy sales yarns chiefly of a coarse character for insulating, and for worsted and woolen weaving, rayon lining fabrics, and a large volume of heavy and light weight napped flannels and specialty fabrics. More than 70 per cent of the cotton plant is now occupied while the worsted plant is running in full on dress goods and men's wear. The company is al-

Better Lubrication at *Less Cost* per month

Does Oil Creep from Roll Necks and Stain Your Yarn?

You can avoid this waste by simply using

TRADE MARK REGISTERED IN UNITED STATES PATENT OFFICE

NON-FLUID OIL

MODERN TEXTILE LUBRICANT

It Stays on Roll Necks—Won't creep out and spread onto rolls.

For ring spinning and mule frames use A-No. 00000 NON-FLUID OIL—it feeds a drop at a time—stays in the bearing and lasts much longer than liquid oil.

NON-FLUID OIL prevents the bearing wear that leads to poor alignment and uneven production.

And so much less NON-FLUID OIL is fed to the bearing, and it lasts so much longer than liquid oil that its use materially lessens the cost of lubrication—figured per operating hour—per month or per year.

Write today for testing sample for spinning frames or other textile machinery, and bulletin, "Lubrication of Textile Machinery." Use coupon for convenience.

Lewis W. Thomason, Charlotte, N. C.
Southern Agent

N. Y. & N. J. Lubricant Co.

Please send bulletin "Lubrication of Textile Machinery" and samples of NON-FLUID OIL for purposes checked below:—

☐ PICKERS ☐ CARDS ☐ SPINNING FRAMES
☐ LOOMS ☐ TWISTER RINGS ☐ BALL BEARINGS
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High Test Concrete at Lower Cost
High Strength! A designed mix with basic slag consistently produces concrete a full third stronger for building specifications. A designed mix with
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CRUSHED & SCREENED
consistently reduces the cost . . . for concrete slag weighs from 300 to 600 lbs. less than any other concrete aggregate. A saving in freight alone, of 10% to 25%.
Birmingham Slag Company
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BASIC SLAG
For better Concrete

JOHNSON WARP SIZERS [Rayon-Celanese-Spun Silk] in actual use today have a combined capacity of 200 miles of warp an hour. In 15 hours the total production of these machines would stretch from coast to coast faster than the fastest flight.

Charles B. Johnson · 10 Ramapo Ave. · Paterson, N. J.

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so producing a number of specialty fabrics for the automobile trades.

It is a singular fact that some mills in Fall River are running along and making money, some of them still operating on goods of print cloth yarn construction, such as carded broadcloths, sateens, and thin goods. Quite a few looms are running on curtain materials. The fine goods mills are securing a fair share of business and for the volume of spindles installed and combers employed, they are running a larger percentage of machinery than the New Bedford mills where much finer yarns are spun as a rule. The Union Cotton Mfg. Co., a print cloth plant, very largely, is operating in full and one of the mills of the Merchants Mfg. Co., is running to capacity on odd styles and semi-fancy weaves. The Parker mills are doing well, this being one of the older plants that was reorganized financially since the War.

Some Plants Making Progress.

There are many New England plants that continue to operate nearly to capacity. The B. B. & R. Knight mills are now selling goods in the converted state and are well occupied. The Lonsdale Company is operating about in full, these being two of the most famous of the Rhode Island plants. Mills in Connecticut like the great Ponemah plant, the Grosvernordale, Lawton Spinning, and Baltic are running full time with most of the machinery occupied. The Naumkeag in Salem continues to turn out Pequot sheets and pillow cases to the extent that the goods can be sold, which in general is above the average of branded sheeting mills in the country. The Otis in Ware, engaged on specialties in heavy yarn dyed fabrics for a variety of working suit purposes is running and making money while the Berkshire in Adams, Mass., is operating nearly in full.

In New Bedford, the mills are now running about as well as they were before the strike was declared last April. Arrangements are being perfected for the complete examination of the mills there by an engineering force equipped to study and report on the possibilities of changing over working methods to lessen the chances of friction with operatives. This action was taken when it was found that some mills were crowding more work on the operatives than they would stand. Owing to the state of the market on fine and fancy cottons of the New Bedford type not more than an average of 70 per cent of the installed machinery is occupied, although there are some mills running 100 per cent.

Tire Fabrics Mills Busy.

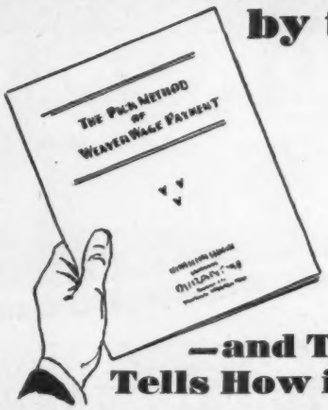
The mills making tire fabrics, three very large plants, are running in full and overtime and the same thing is true of a plant making similar goods in Fall River, all owned by different tire making companies. Operatives engaged in these mills are quite willing to accept new forms of operating machinery without friction of any sort while workers engaged on similar machinery in other mills refuse to accept the changes quickly. The strike has left is scars among the workers and they do not hesitate to threaten reprisals when mill managers attempt to inject new working methods on them.

In the casting about for work on fancy and novelty goods of many descriptions competition of a serious character has developed and buyers are able to hold the advantage on many cloths of a strictly novelty character, that are difficult to make and require great skill in the various mill departments. This is notably true of many of the fine drapery fabrics now being made of synthetic fibers mixed with cotton, and in many cases on cloths made of all synthetic fibers in cotton mills.

Hard to Sell at Profit.

It is no longer a question in New England mills whether new and fancy fabrics can be made. The serious question is to make them to be sold at a profit. When few of the newer styles of goods were on the looms a few mills reaped a good harvest. In the absence of regular business

Many Mills are Paying Weavers by the Pick



—and This Book Tells How it is done

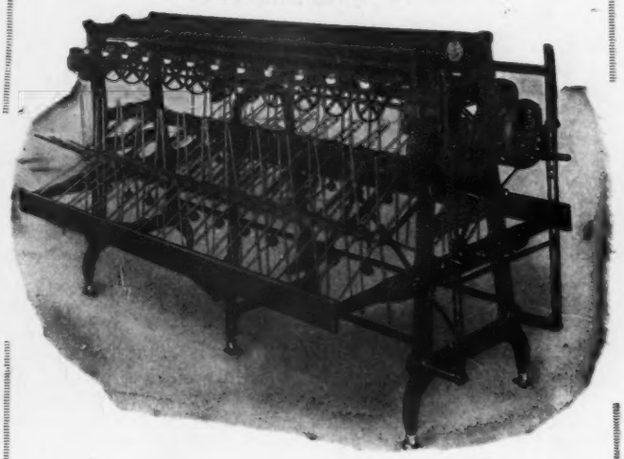
MANY mills are adopting the Pick Method of Weaver Wage Payment because of its many advantages in accuracy, improved production control, incentive to weavers and superior quality of production.

If you are responsible for efficient production in your mill it will pay you to investigate the Pick Method as against the cut mark or yardage method. Write for our book explaining the Pick Method and Productimeter Pick Counters.

DURANT MFG. COMPANY
668 Buffum Street, Milwaukee, Wis.
Southern Representative: GEO. P. DAVIS
Builders Bldg., Charlotte, N. C.
New England: DURANT MFG. CO., *Leo. A. Nourie, Mgr.*
36 Garnet St., Providence, R. I.

An Ideal Winder for Rayon also Silk and Fine Mercerized Yarns

Steel frame construction and patented rigid traverse motion.
Write for circular No. 10.



Also warpers and other special textile machines.

THE SIPP MACHINE COMPANY
PATERSON, N. J.
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GIBBONS G. SLAUGHTER, Charlotte, N. C.

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ECONOMY
FIRE PROOF
BALING PRESSES
ALL SIZES FOR ALL PURPOSES
LARGEST LINE BUILT IN U.S.A.
ECONOMY BALER CO., DEPT. C, ANN ARBOR, MICH., U.S.A.

K-A ELECTRICAL WARP STOP MOTIONS—

as compared with Mechanical Motions—

Southern Mill Men Tell Us—

Require little attention from fixers;
Fixers devote more time to looms;
Looms are kept in better condition;
Better cloth is produced;
Better production is secured.

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Let Us Landscape Your Mill Grounds

And Add More Beauty With Shrubbery

Stimulate employee pride in your plant by making it more beautiful with shrubbery and flowers. Let us give you a plan for planting and landscape effect. We will also give you an estimate on the cost of Evergreens, flowering shrubs, roses, shade trees, etc. Our trained men will advise on the best kind of plants for your needs. A quarter of a century in the South as plantsmen fits us to work out your beautification problems, at the smallest expense or worry to you.

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PERTINENT FACTS

are contained in the Annual Financial Statements.

This information would be infinitely more valuable and effective if furnished at more frequent intervals.

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Closer Market Contacts.

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Much is being said of the prospect for a great cotton goods year in 1929 in the dress goods division. Thus far the predictions affect printed goods chiefly. It is this fact that is making it so difficult for the New Bedford and other fine combed fabric mills to secure business at a profit, The processes of printing and finishing have been improved so much that it is possible to make a very sightly and easily salable piece of goods from carded yarns. Where the yarns are covered by tinted grounds and the surface of the cloths beautified by careful calendering the merit in the combed yarns does not appear important to the buyers nor to consumers.

Carded Printed Cloths Sell Best.

Wherever light ground prints are produced better quality fabrics are necessary. In the past month broadcloths have come into wider vogue for printing and many of these cloths are being shown in bright colorings in contrast with white grounds. But it is exceptional where the very fine qualities of broadcloths running above 144x76 combed are used in volume yardage. Some very fine combed piques are being printed but the business thus far has not run into volume.

Competition is also felt in this quarter from the higher grades of synthetic fibers being used without cotton. Goods of the very fine rayon and Celanese types in crepe, plain, and moire effects, are being printed and sold well, while goods of the fine voile, pongee, and combed lawn types are neglected. It is customary to say that rayon beautifies and does not compete with cotton, but in the dress and underwear or lingerie field, this is not the fact and the fine goods mills, both South and North, are well aware of it.

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Booklet by Armstrong Cork & Insulation Co.

"Roofs That Pay Dividends", is the name of a booklet published by the Armstrong Cork & Insulation Company, Pittsburgh, Pa. This booklet describes the advantages of corkboard as an insulation material for roofs, both in relation to a saving of fuel in the winter months, making the rooms cooler during the summer months, and preventing condensation of moisture on the ceiling where high humidity is present.

Economy of
Efficient Driving Tapes
Only efficient tapes can create economy —tapes that possess those inherent qualities of strength and long life. Barber Spinning and Twisting Tapes are the most economical on the market— evidenced by the number and character of the mills using them exclusively.
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World leaders in the production of spinning and twisting tapes for all kinds of cotton machinery.
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GARLAND Harnesses
ARE BEST
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MACHINE Drawing
Our harnesses are especially well adapted for machine drawing because of the alignment of the eyes and their shape. The eyes always stand square throughout the length of the harness and they are of just the right length and opened just enough to produce the best possible results in machine drawing. Our harnesses are as near perfect for machine drawing as it is possible for a harness to be made.
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ALL STEEL
ECONOMY
FIRE PROOF
BALING PRESSES
ALL SIZES FOR ALL PURPOSES
LARGEST LINE BUILT IN U.S.A.
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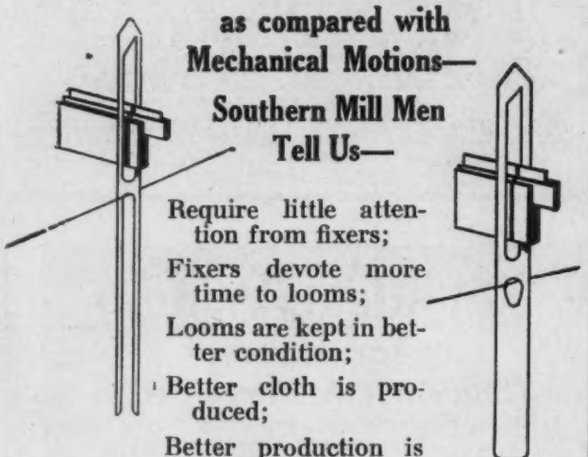
as compared with Mechanical Motions—

Southern Mill Men Tell Us—



Require little attention from fixers;
Fixers devote more time to looms;
Looms are kept in better condition;
Better cloth is produced;
Better production is secured.

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Stimulate employee pride in your plant by making it more beautiful with shrubbery and flowers. Let us give you a plan for planting and landscape effect. We will also give you an estimate on the cost of Evergreens, flowering shrubs, roses, shade trees, etc. Our trained men will advise on the best kind of plants for your needs. A quarter of a century in the South as plantsmen fits us to work out your beautification problems, at the smallest expense or worry to you.

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G
TRADE MARK
GARLAND MFG. CO.
SACO, MAINE

Dyers and Finishers Meet at Greenville

(*Continued from page* 285.)

Yarns to be mercerized and bleached, should be boiled thoroughly before or after mercerizing, preferably before, he said, because a thorough boil gives a good bottom for mercerizing, as well as preventing possibility of over-bleaching with the chlorine bleach.

Yarns mercerized and dyed require a thorough boil-out to secure even dyeing and proper depth of shade.

Package Dyeing.

J. I. White, National Aniline & Chemical Co., Charlotte, N. C., briefly discussed, "Preparation, Dyeing and Developing Colors in Package Dyeing." For this method—by which the liquor is forced through the yarn which is wound on a spring or perforated cylinder—saving in steam, floor space and labor, better penetration and a saving in chemicals are claimed. Mr. White emphasized the importance of proper winding; stated that the colors and chemicals should be free from insoluble matter; and that clear, soft water should be used. He said that sulphur, vat and direct colors are being used in this method. He has found that crystal sulphide gives brighter dyeing than a good quality fused sulphide, indicating that perhaps dulling is caused by insoluble matter in the fused sulphide. Developed and Naphthol colors are also used successfully when fast and bright shades are desired, he said.

"Preparation of Yarns for Vat Dyeing Prior to Piece Bleaching," was next covered by W. R. Ivey, of E. I. duPont de Nemours & Co., Charlotte, N. C. Mr. Ivey emphasized the importance of boiling out, especially in dyeing fast colors to be woven into fabrics and bleached. He said too much importance is placed upon the evenness of dyeing instead of the fastness of dyeing, when the boiling-out time is reduced unduly. He suggested leaving the problem of dyeing waxes with the candle-stick manufacturer, as every dyer has sufficient difficulties of his own in dyeing the cotton. To accomplish the result of removing waxes and oils, he said this may be done easily "if there is a thorough and sufficient boiling out using the proper materials. To obtain as near perfect results as possible, first wet out the cotton with a good oil. Then add a small amount of soda ash and bring the temperature to as near the boiling point as possible, which will saponify the oils and waxes present and convert them into a soluble compound. Allow a sufficient time for them to be made soluble, and wash the cotton thoroughly with warm water to remove the impurities altogether. The cotton is then free of waxes which otherwise would hold the color or be dyed similar to the cotton.

Advantages of Temperature Control.

C. F. Walker, of E. F. King & Co., Boston, Mass., discussed, "Advantages of Temperature Control in Finishing Plants." He emphasized that in producing quality goods, temperature control is important. He showed the necessity of temperature control in the mangle, and succeeding processes. "Goods mangled cold will tend to finish thin, and vice versa," he pointed out.

Should the goods leave the starching or dyeing process bone-dry, or somewhere near conditioned, he asked. Even the steam cost of overdrying would seem to be of interest.

In starching and dyeing, he said, the temperature control is important. The penetration of the starch into the goods, the squeeze of the rolls, the rate of exhaustion of the dyestuff, are all dependent on the temperature.

In softening, he said, heat calls for quite some consideration. He asked whether the goods should cool before damping, pointing out that cool cloth absorbs moisture at a different rate than hot cloth, so that the finish will differ if the cloth is not of uniform temperature. On dampers and calenders he emphasized the value and necessity of temperature and pressure.

As stated, no report was permitted of the afternoon discussions, but it was evident that the character of these group meetings continues on the high plane established by the first, this being the second formal meeting of the division. The banquet in the evening was a thoroughly enjoyable climax to a most successful meeting.

Among the Knitting Mills

IT is reported that the Glorie Underwear Mill, Incorporated, 135 Randolph Street, Eufaula, Ala., is planning an addition to the mill and installing sixty new machines.

The building, 110 x 150 feet, which the Richmond Hosiery Mills, Rossville, Ga., is erecting is nearly completed. Twenty full-fashioned machines will be installed at first.

It is reported that a manufacturer of hosiery in Philadelphia, Pa., is contemplating establishing a branch mill in Milledgeville, Ga.

The common stock of the Cartersville Mills, Inc., Cartersville, Ga., has been purchased from the Gate City Cotton Mills, Atlanta, Ga., by the Hampshire Hosiery and Underwear Company. The Cartersville plant manufactures boys' heavyweight ribbed underwear for which the Hampshire organization will act as selling agents. J. J. Fowler, vice-president, of Cartersville, will remain in charge of the mill, it stated.

The Home State Hosiery Mills is the name of a company formed to take over the Ross Knitting Mills, LaFayette, Ga. Lon Mavity is manager, and fancy half-hose is being produced. The plant is in full production on a day and night shift.

Asheville Silk Hosiery Company, Asheville, N. C., a new concern, will erect a mill for the manufacture of full-fashioned silk hosiery on Denver Road. The first unit of the building will be 56 x 154 feet and it is planned to have this completed and in operation by March 1st. Plans call for the extension of the building to 364 feet in length by the end of next year. Albert Shultz and David Baer, Lansdale, Pa., will be the active owners and directors of the plant.

The Montcastle Knitting Company, Lexington, N. C., has started operation with 50 knitting machines, producing boys' sport hose. A second unit is planned to be added in the next few months.

The Terry Hosiery Mills, High Point, N. C., is the name of a new mill recently completed. The building is of brick and steel construction, 75 x 77 feet. Men's fancy half-hose will be produced on 25 Scott and Williams machines.

The Pool Knitting Mills, Sherman, Texas, were merged recently with the Houston Hosiery Mills, Houston, Texas. L. A. Parson, of the Houston Hosiery Mills, will have charge of the operations at the Sherman plant.

Knitting Section

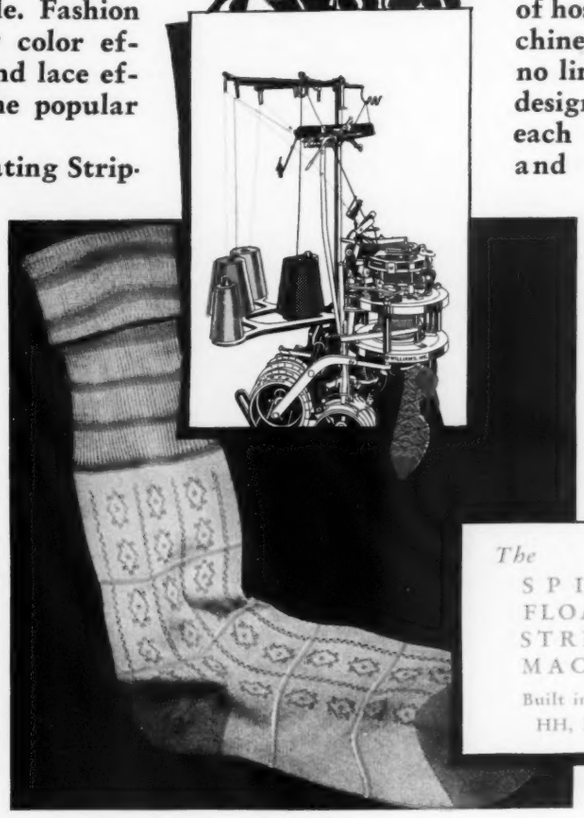
ARE YOU SELLING *this* HUGE, RICH MARKET?

THE demand for *smart* children's half-hose is almost inexhaustible. Fashion prescribes catchy color effects . . . clock and lace effects, too, and the popular stripes.

The Spiral Floating Striping Machine is ideal for this work. With it you can supply the call for novel designs in moderate priced hose . . . which means large and steady profits.

Note the attractive type of hose produced on this machine. There is practically no limit to the variety of designs that can be knit . . . each right in the vogue, and a business builder.

Two-tone effects as well as horizontal stripes may be secured with the Spiral Floater. Fancy and striping attachments can be readily disconnected and plain hose produced.



The
SPIRAL
FLOATING
STRIPING
MACHINE
Built into Models
HH, K and B

Established 1865

SCOTT & WILLIAMS

Incorporated

366 Broadway New York, N. Y.

What FINISH Manufacturers in RAYON ?

IT SHOULD be in keeping with Rayon's luxurious appeal. Smart . . . catchy. Anything short of this only handicaps your production . . . and sales.

Willcox & Gibbs appreciates the importance of finishing operations. So, made available for your use are machines which competently handle every type of stitching and seaming.

Willcox & Gibbs machines help to put your Rayon production—both women's and men's—in the preferred class. That is, the ready selling, money making class.

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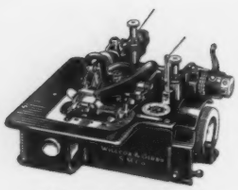
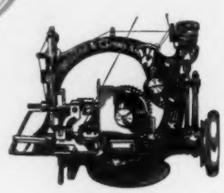
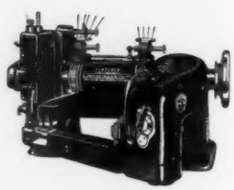


Overlock Seaming and Hemming Machine

Lockstitch Machine



Shell Scalloping Machine



Flatlock Machine

Write our Home Office for samples made on these machines, or submit your own fabrics for sample purposes.

SOLE UNITED STATES AND CANADIAN AGENTS FOR CORNELY AND UNIART EMBROIDERY MACHINES

Many Definite Trends Affect the Knitting Industry

Southward Movement of Mills; Lay-Outs of Plants; Importance of Small Mills; and Marketing Problems Discussed

By R. L. P. Reifsneider

THE cost of marketing a given manufactured commodity is so inseparably linked with the cost of production that economy of plant construction becomes a most important question in planning a new enterprise and adapting an old one to new conditions. Increasingly keen competition is the urge back of decreasingly lower cost of plant operation for balancing with the higher cost of modern merchandising. The force of this is perhaps the more strikingly evident in its application to hosiery than almost any other textile product. In no division of hosiery is there keener competition and so great industrial expansion as in the full-fashioned group. This is given recognition in the definite drift as to location and mill construction in quite recent years and the present tendency.

The old theory that a manufacturing plant must be located in a densely populated community in order to have a supply of desirable help available has been exploded. The trend is from the urban to the suburban as a first step toward lower cost of plant, with due consideration to transportation facilities and living cost. The automobile and establishing of bus lines have solved the transportation problem for the mill operative. Workers and their families follow industry not too remote from population centers.

For the worker in the North, the South is a long way from home. He is less hesitant to go out to adjacent sparsely populated localities lacking the attractions of city conveniences than to sections where he may feel that he must undergo acclimation to be content. So, northern manufacturers who may have been seriously considering migration to southern climes have builded new mills in semi-rural communities not far removed from their old habitat. Only a few years ago there were but two full-fashioned hosiery plants in Pennsylvania between Philadelphia and Reading, the two big centers of the industry. Now there are twenty, all in successful operation, and several are in prospect as a very near future development.

Necessarily the first item in cost of plant location is a building site. Suburban acreage involves a far less expenditure than a city factory site hemmed in by other factories emitting clouds of sooty smoke that finds its way into the knitting room and auxiliary departments of a hosiery mill so situated. Thus, aside from cost of site, there may be more potent reasons for choosing the suburban location. But first cost often is the determining factor, and this is being demonstrated in the rearing of new mills.

Mr. REIFSNEIDER

is recognized as a leading and authoritative observer of conditions in the knitting industry. He formerly was assistant secretary of the National Association of Hosiery & Underwear Manufacturers, and is a well known figure in the field.

The ideal full-fashioned hosiery mill is a one-story structure, the ground cost of which ordinarily is prohibitive in urban manufacturing centers—reason number one for selecting a suburban site and a factor in economic construction in the southern field. Engineers recommend and the trend is to the single-story factory with sawtooth roof facing the north for economy in the matter of light. It is estimated by Ballinger & Company, engineers, that a building of this general description requires an average of but a half hour of artificial lighting a day, compared with two hours in a multiple story building.

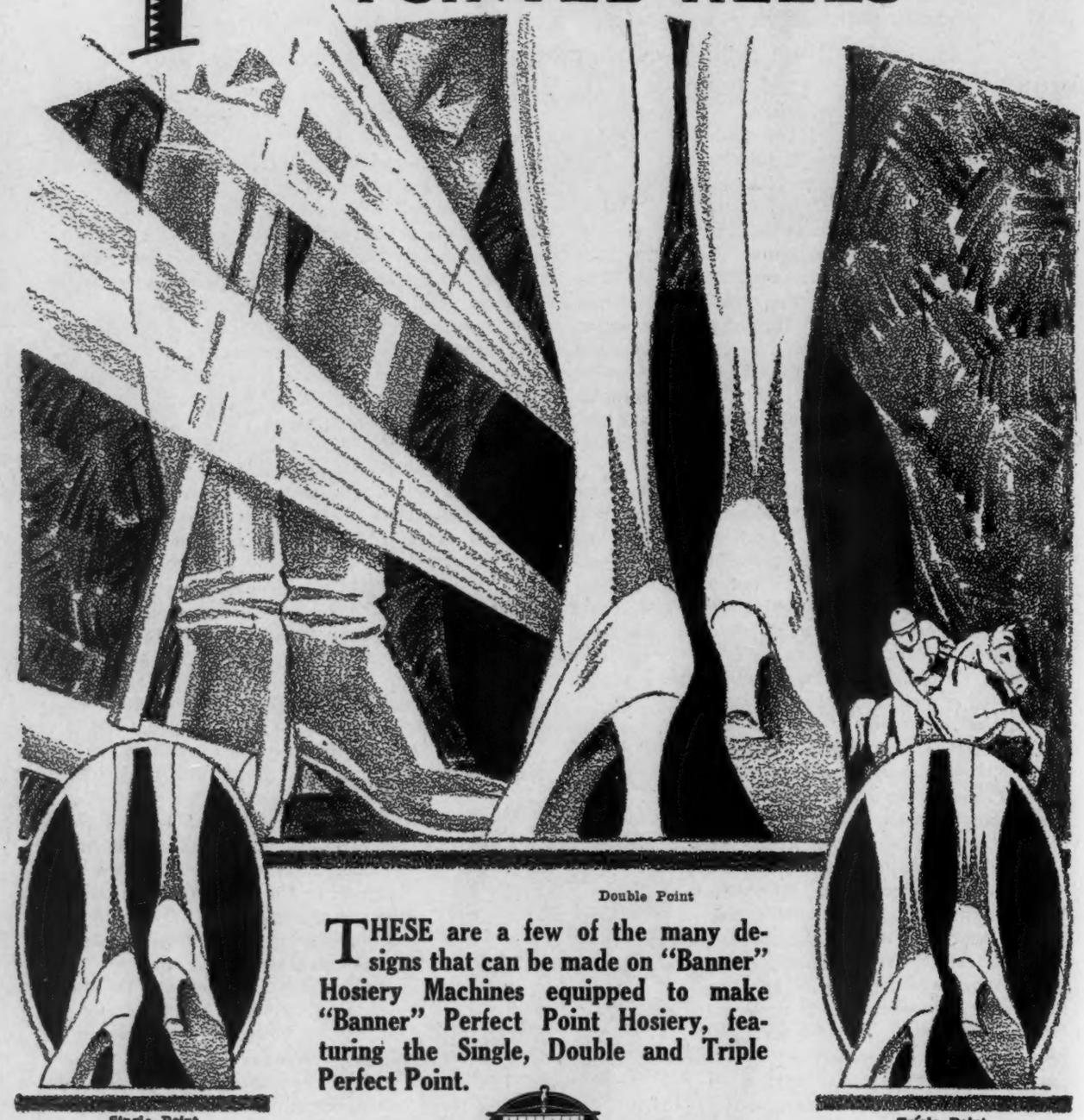
Keeping in mind economies in construction and operating facilities as one means for offsetting inescapable extravagance in distribution, it would seem that if manufacturers give heed to the recommendations of building engineers there will be in the coming years a definite drift to the one-story building for full-fashioned hosiery mills. While size of structure obviously depends on the number and type of machines to be installed, a width of 105 feet is regarded as adapted to present installations and those to be made so long as present types of equipment are employed.

In 1927, according to an engineer's survey, 80 per cent of the machines were of 20 sections, as compared with 52 per cent in 1925, when 47 per cent of the total represented the number of 18 section machines. The trend therefore was quite marked the last year, when the survey showed 24 sections represented 12 per cent and 28 sections two per cent of the total number of machines in operation.

The ratio as given for the third quarter of 1928 is: 18 sections, two per cent minus; 20 sections, 45 per cent; 24 sections, 53 per cent.

Twenty sections are favored in mills where one knitter operates two leggers. Such machines were installed late in 1928 by the Ajax Hosiery Mills in a new mill at Pottstown, Pa., where the multiple machine plan is in effect, as it is also in the company's mills in Phoenixville, ten or fifteen miles distant from Pottstown. The Ajax is one of the full-fashioned establishments to remove from Philadelphia to the two towns mentioned for obtaining a lower

PERFECT
POINTED HEELS



Double Point

THESE are a few of the many designs that can be made on "Banner" Hosiery Machines equipped to make "Banner" Perfect Point Hosiery, featuring the Single, Double and Triple Perfect Point.

Single Point

Triple Point

HEMPHILL COMPANY
MAIN OFFICE AND FACTORY
PAWTUCKET RHODE ISLAND
Hosiery Machine Manufacturers

New York Sales and Show Rooms
93 Worth Street, New York

Philadelphia Sales and Show Rooms
Heymann Bldg., 213 S. Broad St.

Southern Offices
James Bldg., Chattanooga, Tenn.
Commercial Bank Bldg., High Point, N. C.

Colonial Knitting Mills, Inc., Mohnton, Pa., equipped with Wildman 42-gauge full-fashioned machines.

operating cost in factories occupying less costly sites and subject to lighter taxation—an economic expedient for meeting the higher distribution costs.

The tendency in matter of fineness as determined by gauge appears to be toward 42-gauge for popular price hose and 45-gauge for a price between high and low for standard construction and conforming to the idea of progression in relation to fineness of fabric. The following table, compiled from industrial surveys, shows the per cent of the total number of leggers of varying gauge.

	1925	1927	3rd quarter of 1928
48-gauge	0	8	1
45-gauge	3	22	43
42-gauge	73	66	55
39-gauge	22	4	1
36-gauge	2	1	1

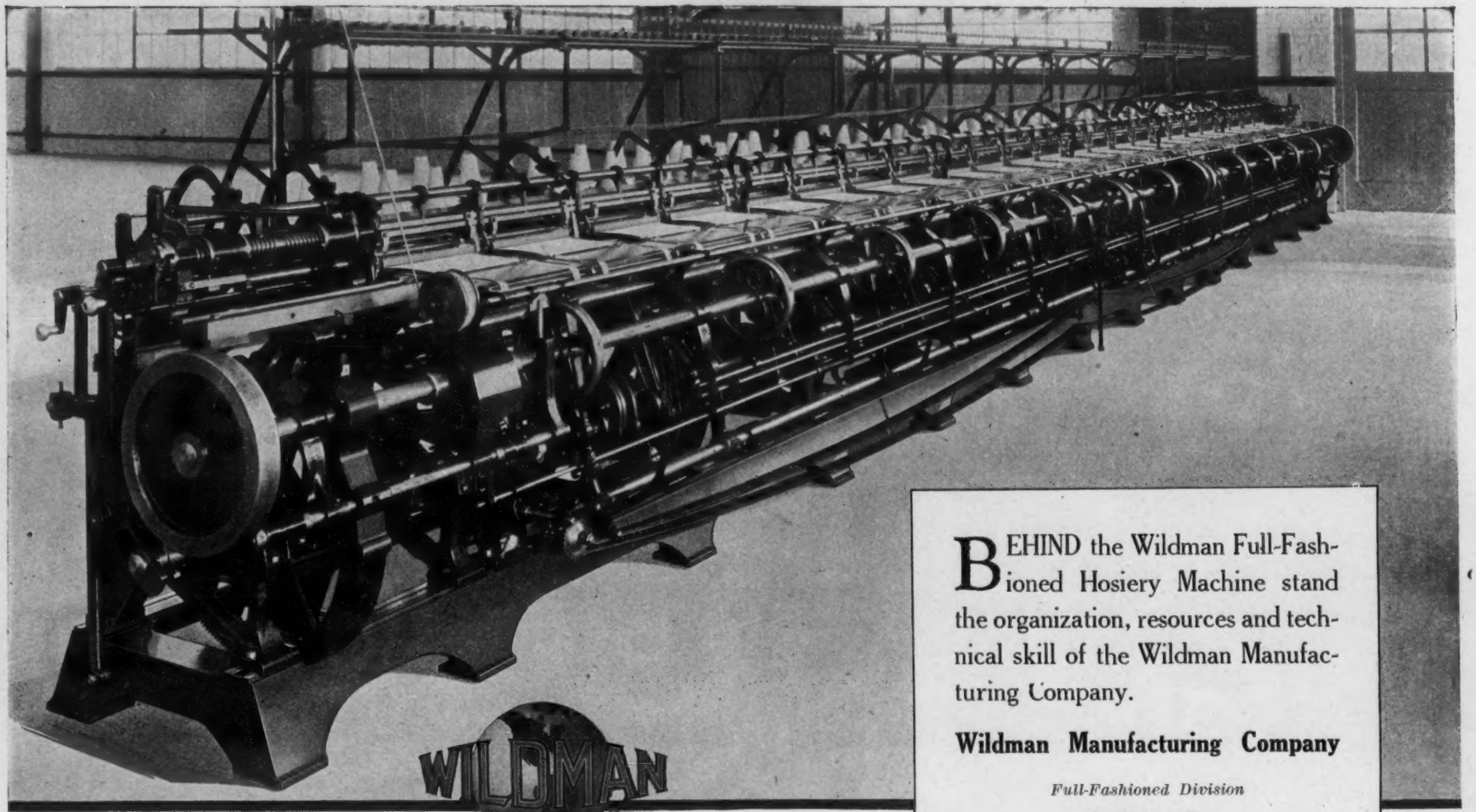
There is shown in the table a drop in the percentage of 48 gauge machines this year, from 1927. While some manufacturers have been and still are successfully knitting stockings to be dipdyed, some express dissatisfaction. It is given as the opinion of machine builders and hosiery manufacturers that 48 is a less flexible gauge than 45, and that the difference in the usually obtainable price does not compensate for the difference in cost of knitting. Not all mill managements are in accord with this view, and some maintain that 48-gauge will in the course of a few years be as readily marketable at an adequate price as are 42 and 45. As is pointed out by a manufacturer planning to install 48-gauge next year, one does not have to hark back very far to the time when 300-needle circular knit hose was undreamed of, whereas it has advanced to a foremost place in popularity in the circular division, and 48-gauge full-fashioned would represent no such stride relatively as has been made by 300-needle circular knit. This manufacturer is planning for the future.

Mass Production and Mergers.

While much has been said for and against the desirability of mass production by large units and the merging of small manufacturing establishments with a view to that end, the probabilities are that the greater part of the full-fashioned hosiery will be made in mills in the comparatively small class. They hardly can be regarded the more economical, yet would appear the more flexible, lending themselves to economic conditions as they arise and ever recurring changes in methods of distribution. In the last seven years numbers of mills containing from four to sixteen or twenty leggers and footers have sprung up, organized generally by two or three knitters in cooperation with a complement of operatives for other departments, and with employees ambitious to become employers this seems likely to go on. This becomes a stronger probability from the fact there are, apparently, enough experienced knitters for the better jobs and some to spare, resultant in part from the adoption of the two-machine system in an increasing number of plants.

Practical Knitters are Organizing Mills.

There are in Philadelphia and suburban territory at least a dozen mills organized and manned by men who left their employment to engage as principals and quite recently two knitters gave up their jobs in a large mill to start one of their own, intending to have it in operation early next year. A distributor in New York is soliciting correspondence with knitters who can invest $2,500 each in a mill, he to put into the proposed enterprise $7,500 and sell the production, be-



BEHIND the Wildman Full-Fashioned Hosiery Machine stand the organization, resources and technical skill of the Wildman Manufacturing Company.

Wildman Manufacturing Company

Full-Fashioned Division

Norristown, Pa.

WILDMAN
THE WORLD'S STANDARD

WILDMAN
FULL-FASHIONED HOSIERY MACHINE

sides financing the payrolls and silk purchases. This contemplates virtual control of the manufacture of the goods which he would put into distribution and taking a proportionate share of manufacturing profits in addition to the usual selling commission, practically putting production and distribution under one roof. Or, if he received only a commission plus interest on his investment, and the knitters were content with a return equivalent to wages plus interest on their investment, the organization would be in a position to meet competition in a market crowded with hosiery.

The small mill has a low overhead in the way of managerial expenses, which may offset in some measure the savings by mass production, and is less likely to close down part of the plant in dull seasons than is a larger establishment. In the case of one mill which came into existence but a few years ago, the four partners all were experienced as knitters or fixers, and members of their respective households became loopers, toppers or seamers. It thrived as a family affair and a few months ago more machinery—all that the building would hold—was installed. The concern was at a disadvantage in not embracing or employing a person skilled in merchandising and to some extent was at the mercy of selling agents. Yet it has progressed as one of the mills having less than twenty-five machines.

Of the Country's Full-Fashioned Production

22 per cent is produced in mills with 26 to 50 machines
12 per cent in mills with 51 to 100 machines
5 per cent in mills with 101 to 200 machines
2 per cent in mills with 201 to 300 machines
3 per cent in mills with more than 300 machines
and
56 per cent in mills with less than 25 machines

Small Mills are Important Factors.

It is estimated by an industrial engineer who has made a study of full-fashioned hosiery mill management in all of its various details that more than one half of the hosiery is made in mills having less than twenty-five machines. To be precise, his figure as to percentage is 56. Going down the scale of percentages, it is the engineer's estimate that 22 per cent of the production is in mills with 26 to 50 machines, 12 per cent in plants of 51 to 100 machines, five per cent from 101 to 200 machines, two per cent from 201 to 300, and one per cent each from groups representing 301 to 400 machines, 801 to 900 and 901 and over. This would be equivalent to saying that one per cent of the hosiery production in the United States can, if at all, be credited to but one mill.

More Small Mills Predicted.

The probability is that most of the expansion in the full-fashioned industry in the next few years will be in an increase in the number of small new mills and enlargement of some of the successful small ones which have been in existence long enough to attain a strong foothold in the trade. The larger promotions aside from mergers may be expected in the South, for the reason given at the outstart of this article—low initial cost of plant and lower operating cost as the first item in economic production for meeting the high distribution cost. It is recognized that in the struggle under conditions as they now are, and likely to be intensified, the modern plant will be running when the older ones, often planned with little consideration of the essentials for meeting keen competition, will be passing into the mortality list.

The advice is given by a mill executive who has gone through the fire of experience, "do not start a mill with old machinery unless you are a strong factor in distribution, strong enough to 'get away' with anything that obsolete equipment can be made to produce." What he said was intended more specifically as a warning to operatives having experience in their respectives trades but lacking in capital, a small minority element in distribution seeking mills which they might control for exploitation of price hosiery, while matching a minor investment and their experience in marketing against ambitious operatives' capital and knowledge of knitting. This advice might have been more valuable a few years ago than now, the drift for some time being toward the scrapping of obsolete and much worn equipment. So much machinery is taken by manufacturers for replacement that statistics relating to new installation leave an exaggerated impression of mill expansion.

Expansion in the southern field has been orderly and obviously not so rapid as in the North. But from present indications it will proceed at a swifter pace, on strictly southern initiative and largely southern capital, because for one reason the indecision of northern interests in respect to plant removal and immediately available help. For the same reason that can be ascribed for the transition of general activity in the seamless industry from northern centers, it seems no idle prediction that in proportion as production of circular knit hose has been transferred to territory below the Mason and Dixon line, will there be migration in the full-fashioned division. But as the South expands in full-fashioned hosiery will its seamless groups probably undergo some weeding out?

Full-Fashioned Versus Seamless.

In the Reading, Pa., area in the last two years about a half dozen seamless mills have ceased to exist and as many full-fashioned plants have been established. In the last four years William Steele & Sons Company, Philadelphia, engineers and contractors, have built or supervised the construction of twenty-five full-fashioned mills and not one seamless mill, and has under way and plans for six, three of which are new plants and three representing expansion. One with which the company is engaged as supervising architect is at Pulaski and will, it is stated, be the first complete full-fashioned hosiery mill in Virginia—an-

(*Continued on page* 367.)

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Shade Matching *in* Textile Dyeing

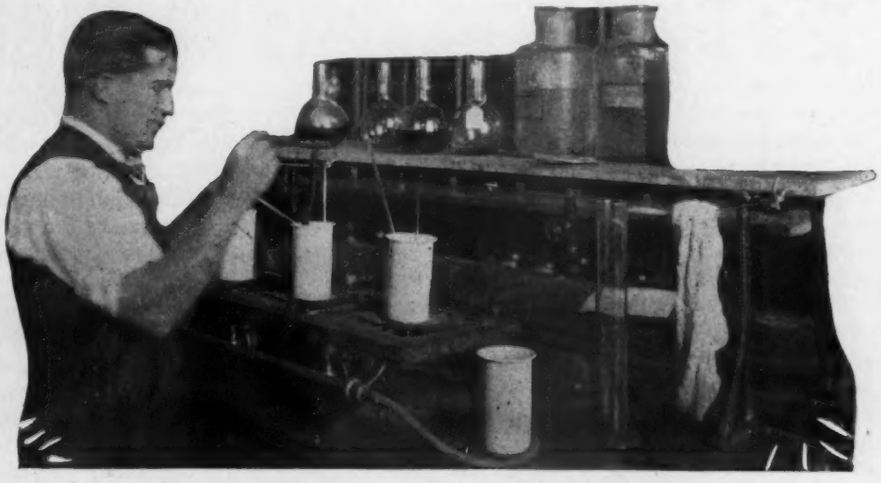
With the Light Shades Demanded by Fashion, this Operation Has Become a Particular Problem for the Hosiery Dyer

By Noel D. White
Article Sixteen of a Series on "The A B C of Dyeing"

THE matching of shades in the dyeing of textiles is an operation that requires experience, and that can only be acquired by constant practice. Of course, anybody can look at two pieces of dyed material and decide that they are or they are not of the same color. That is easy; but a dyer is given a sample and told to go ahead and dye a lot to match it, or the firm decides to put a new shade, or several new shades, in line for a coming season; the samples are picked out of a standard sample card, or cut out from anything colored that will give an idea of what the shades desired are, and it is up to the dyer to match them to the satisfaction of his customer.

The Dyer's Problems.

It would not be much trouble if it was left to his judgment to say when a match is correct, or near enough, but he must please other people and many times when he thinks he has dyed to a good match, if viewed by others it is decided it is not so good. Different eyes will see a shade in a different way, the time of day will make a difference in the look of a shade. Different dyestuffs used in the dyeing will make it difficult to obtain a correct match. Samples of different material will make matching an extremely difficult ordeal. The writer has had to match silk or cotton or wool with a shoe, or a piece of leather, or a piece of colored paper, or a piece of wood. He was once given the mouthpiece of a brown telephone receiver to match the dyeing of the silk used for insulating the electric wire cord, and buttons to match the silk for buttonhole threads. With such a variety of samples to go by it will be easily seen that the dyer must have an unlimited experience to be successful, a trained eye for color which only time can impart. As in any other endeavor, practice will enable anyone to succeed provided an ordinary amount of common sense is a part of his make-up.



Matching a shade in the beaker in a bath heated by gas.

As the trend today is to specialize, the dyeing of textiles is at present following more or less in a line of special endeavor. There are silk dyers and dyehouses specializing on silk; then there are cotton dyers and wool dyers, each more or less keeping within their line. The hosiery dyer has both cotton and silk, or cotton, silk and wool, or artificial silk, as the piece goods dyer who may have to work on several fibers in the same piece. In each case, the dyer learns to specialize in his line, after a while becomes familiar with his mixtures of fibers, and proficient in his work. In any case, there are difficulties to overcome, every dyer thinks his line is the worst and his lot the most unbearable, but he keeps on day in and day out, and when given a chance to get out of the dyehouse he feels like a fish out of the water.

The dyer of yarn, it seems, has the easiest time. He has only one fiber to contend with, but he is called upon sometimes to have the yarn loaded, or some degree of fastness which the hosiery dyer cannot produce, or he must dye with machines that, up to date, are only ten per cent perfect and he must be very exact in his matching, especially if he works for the trade which has learned to demand correct matches at all times.

The dyer of hosiery usually works mostly for his mill, he has only to satisfy his employer, the proprietor, superintendent, or the manager, and while he is expected to match his shades correctly, still an intelligent employer is always willing to sacrifice on the precision in matching his shades rather than sacrifice the appearance, and impair the quality of his goods, as the best results are always obtained when dyeing is done with the least amount of handling.

It is most important to be able to select the proper dyestuffs for the work one has to do. Here is where a knowledge of dyestuffs is required; their behavior toward different fibers, the best mode of application, the different chemicals to use in accelerating or re-

tarding the absorption into the fibers, their fastness to light, or washing, to crocking, to milling, their tinctorial strength, their rate of penetration, how they behave under heat in the dye bath and how they change on a hot-board and on cooling, also how they behave when mixed with one another.

Most dyestuffs of the same kind can be mixed with impunity at will in any proportion; some direct colors will stand up well enough when mixed with some acid or neutral dyes, but it is always safer to dissolve dyes of different nature separately when medium or dark shades are to be dyed, and there are dyes that will be completely destroyed if mixed and dissolved together with dyes of a different nature. These are things that the would-be dyer and mixer of dyestuffs must learn by practice, both in the laboratory and in the dyehouse.

Behavior of Dyestuffs Toward Different Fibers.

In selecting dyes for dyeing hosiery, if the dyer has mercerized cotton, rayon and silk in his goods, he must look for direct colors which dye all three fibers as nearly alike as they make them for easier work. There are a number of them. Even if he has to select them from sample cards of different makers to get a good line, it is always advisable and he can pick out the best from each. A dealer may have one or more excellent browns, another may have a yellow that is hard to beat, or a red, or a blue, or a purple.

From a product sample of dyestuffs one gram is weighed out carefully and dissolved in one liter of boiling water, then pieces of fabric, containing the two or the three fibers as the case may be, weighing 10 grams, are dyed in a beaker with different proportions of the dye solution. The dyer may use his judgment in the amount of dyestuffs used for each test, but he should learn to make his test always with the same proportions. Provide a systematized standard and adhere to it, except on special occasions when he has to dye dark shades, then he has to select the best money value in dyestuffs, and must test for tinctorial strength also. He will find that some dyes go on the cotton mostly, leaving the rayon and the silk white, others that go on both cotton and rayon, and not at all on the silk. Most dyes of this kind may be made to go on the silk by adding a little acetic acid. These dyes are the ones to be preferred if the dyer could be induced to learn the use of acetic acid or formic acid in his dyeing. Much faster colors can be produced dyeing in this way. The only precaution to guard against is that the acid must be added to the bath only after the cotton and the rayon are colored, that is after the dyeing has been carried on a certain time to give the vegetable fibers a chance to take up most of the dyestuff. The dyeing is started without any chemicals except some dye aids like turkey red oil, tetracarnit, etc., after 15 minutes boiling, Glauber's salt is added, and the goods worked in the cooling bath for 15 or 20 minutes when the cotton will be found to have absorbed nearly all of the dyes, then the temperature of the bath is lowered to not more than 160 degrees F. using one to two per cent of acetic, or one half that amount of formic acid to let the silk take up what are left in the bath.

If the dyer prefers not to use any acid in his dyeing when starting out to prepare a formula, he will have to find out how much of the direct color he selects, goes on the silk, and provide for the deficiency with some neutral or acid colors to bring up a good union. Taking for example the formula given here, if no acid is used he must use at least twice the amount of neutral color given here to start with.

Matching a Sample in the Beaker.

Having made a selection of the dyestuffs he intends to use, the dyer is now ready to proceed and do some mixing and matching. He must not be content to select one dyestuff of a certain color. It is better to have tests of different dyes of the same colors and nature on hand, because while a dye may work properly and evenly testing in the beaker, when dyeing a lot in the machine that dye may be found not the best to use.

Sample in hand, he must select from his dyeing tests the one approaching nearest his sample. As shades and names are now standardized or nearly so, for all hosiery mills, we will take a gun metal for our first trial. One direct grey test is selected which has been dyed with 50 c.c. of the dye; that means that one half per cent of color has to be used, it needs a little toning up to match the sample of gun metal. A little direct brown for the cotton and rayon or silk, and some acid or neutral color for the silk. As the dye test sample is 10 grams, and the matching has to be done preferably on a whole stocking weighing 25 grams, a tentative formula is made up as follows:

Direct Grey	0.50 per cent or	125 c.c.
Direct Brown	0.25 per cent or	65½ c.c.
Neutral Grey	0.25 per cent or	65½ c.c.
Neutral Brown	0.10 per cent or	25 c.c.

The dyestuffs are weighed out as previously mentioned, one gram of each, and dissolved in 1,000 c.c. (1 liter) of boiling water, and the proportion indicated measured out and poured into the beaker, then water is added to make the volume of the bath one liter for the 25 grams of goods, and the stocking already prepared, ready for dyeing, entered in the bath, the beaker put on the stove or in the water heater, and made to boil. After a few minutes it is salted. This being a medium dark shade, 20 per cent of Glauber's salt should be used; five grams of Glauber's salt is weighed and poured into the bath, boiled a few minutes longer, then the beaker is raised or removed from the stove to cool down about 15 minutes. At this time the acid should be entered to dye the silk; using two per cent, one half c.c. of acetic acid is needed. To measure one-half c.c correctly, it is better to take 5 c.c. and dilute with cold water to a 50 c.c. solution, then use 5 c.c. of the solution. If some direct color should be found to go too heavily on the silk, perhaps with another tone, an addition of one per cent of phosphate of soda should be used at the start. That will make the bath slightly alkaline, and help to force more color on the vegetable fibers, and will in no way have any effect on the bath when the acid is entered. This trick of using phosphate should be learned by every dyer who aspires to make a success of his trade.

If the dyer prefers to dye without acid, the amount

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of neutral colors for the silk in the tentative formula should be doubled at the start, and the stocking should be taken out, washed, boarded to start matching 15 minutes after salting the bath. If additions or corrections have to be made to get a good match, it can be done in the same bath provided it is cold enough, but it is preferable to make another trial, increasing or diminishing the dyes that seem to be at fault whether on the cotton, rayon or silk, and a new formula made accordingly.

With acid in the bath, additions of direct colors to correct the cotton or the rayon cannot be made in the same bath, as the dye would go mostly on the silk. It is always better to make the addition in a fresh bath if the amount of color needed is not much, otherwise a fresh start with a new stocking is preferable. When the silk has to be brought up to shade, it can be done easily in the same bath with or without raising the temperature. In raising and keeping up the temperature of an acid bath, the dyestuff will come down from the cotton, and gradually and evenly go up on the silk. This tendency can be taken advantage of to correct some dyeings when the cotton is found to be dyed heavier than the silk, and instead of adding color to the silk a boiling and perhaps a little addition of acid may be helpful to balance a shade, and increase the chance of an even job. When a good match is obtained, a correct formula for the amount of goods to be dyed is calculated and pinned on the stocking, and another one filed away for future use.

Matching Shades in the Dyeing of Textiles

IN THIS article are given intensely practical and specific methods for matching shades. First comes the matching of the shade, for sample, in a beaker; then comes the actual application of the dyestuff in the machine according to sample.

Mr. White's articles are based upon an experience of two score years in textile dyeing and finishing. The reception accorded them by many readers are a recommendation of their practical and useful assistance in the every-day operation of a dyehouse.

The author will be glad to consider, for future articles, any topics pertaining to dyehouse work upon which readers would like to have his opinions.

Dyeing a Lot in the Machine to a Sample.

Having arrived at a good match in the beaker, a formula can be prepared by calculating the different dyestuffs used in dyeing the stocking in proportion to the weight of the lot to be dyed. As the weights are in percentages, it will be found easier to use a Dyer's Percentage Table. Using the above formula as a convenient standard, we have in the formula as given:

Direct Grey 0.50 per cent for 25 grs. 125 c.c.
for 100 lbs. 8 ozs.
Direct Brown 0.25 per cent for 25 grs. 62½ c.c.
for 100 lbs. 4 ozs.
Neutral Grey 0.25 per cent for 25 grs. 62½ c.c.
for 100 lbs. 4 ozs.
Neutral Brown 0.10 per cent for 25 grs. 25 c.c.
for 100 lbs. 1 oz. 263 grains.

The dyestuffs are weighed out, put into a pail, hot water poured over them, and carefully stirred with a paddle to thoroughly dissolve them, then strained through a fine sieve.

With a lot in the machine, water and steam are turned on, the machine is filled up, the dye aids I mentioned previously added, and the drum started. The dyestuffs are poured in, the bath raised to boiling and boiling continued for 20 minutes, then the salt is entered and the steam shut off to cool the bath for another 20 minutes. Now it is time to sample if no acid is used. As a formula made up in a beaker in the laboratory will not always check up correctly when used for dyeing in quantities in the dyehouse it will be found that some additions have to be made. In most cases it will be found that it is only a matter of darkening the shade a little. Maybe the silk will need a little touching up, and the addition may be made right in the same bath, but if it is the cotton that needs correcting it is the best practice to do it in a new bath, putting whatever dyestuff is needed in the new bath before any salt is entered to let the color penetrate thoroughly in the goods, and avoid an uneven job.

If the dyer will use acid, after the salted bath has cooled down for 20 minutes one to two per cent of acid is added, the bath brought up to the boil again and the lot run for 20 minutes longer. A sample is now taken to match with the pattern. If additions are needed the same procedure as outlined above may be followed, and silk colors may be added with impunity in the same bath, but not direct colors.

It will be seen that I never mentioned dyeing in the boiling off bath, or the one bath method. I am well aware that it is used successfully in many dyehouses, but to me it is an absurd way of dyeing silk, and I cannot recommend it. I have tried it for a time, have found that colors are not fast, time is not reduced, dyeing becomes more uncertain, and I cannot say that results are improved in any way. One thing is certain—the amount of dyestuffs used in dyeing with the one bath method is out of all proportion. The dyer who wants to learn dyeing with the least amount of dyestuffs will have to do it with two baths, and learn to use acid for his silk.

[This is the sixteenth of a series on dyeing by Mr. White. The next installment will appear in an early issue.—The Editors.]

THE third article in C. H. Baxter's current series on full-fashioned manufacturing will appear next month, instead of in this issue, and it is hoped to continue the series to completion from that point without further interruption.

We refer those interested particularly in full-fashioned work, however, to Mr. Reifsneider's article upon another page of this issue, certain sections of which discuss in detail trends in full-fashioned manufacture from the standpoint of plant lay-out, gauge of machine, etc., etc.

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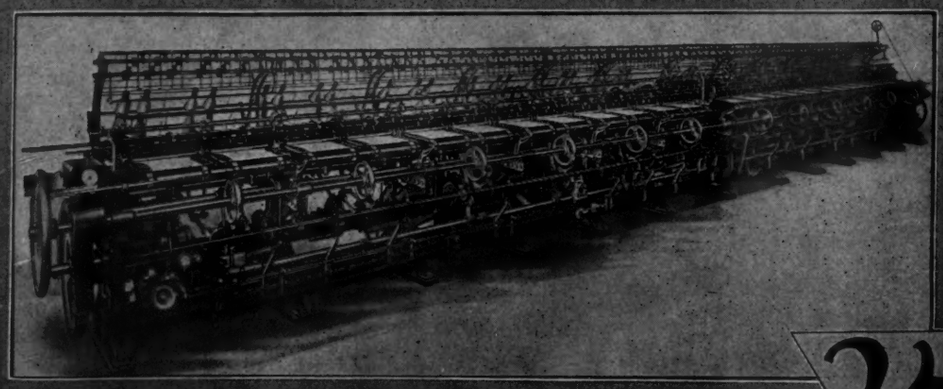

24 SECTIONS ALL GAUGES

FULL FASHIONED HOSIERY MACHINES

We invite our readers to make use of this department for the discussion of any and all problems arising in connection with the knitting mill from the office to the packing and shipping departments. Questions, answers or letters need not conform to any particular style and will be properly edited before publishing. All questions will be answered as promptly as possible. The names and addresses of the contributors must be given, but will be held in confidence and a pen name substituted when printed. All accepted contributions other than questions will be paid for after publication. The editors do not hold themselves responsible for any statements of opinion or fact which may appear in this department unless so endorsed. This department is open to all.

Preparing Silk for Full Fashioned.

EDITOR COTTON:

We have some questions pertaining to full-fashioned hosiery manufacture which we would like to submit to the readers of "KNITTING KINKS." We shall appreciate any suggestions which your readers may furnish in connection with any or all of them. Our questions are:

1st. We would like to know if in soaking silk for full-fashioned tram, is it better to use a sulphonated prepared oil or better to use neatsfoot oil and olive oil soap or olive oil and olive oil soap?

2nd. What kind of back winding solution do you recommend?

3rd. Have you ever used glycerine back wound solution, and with what results?

4th. In allowing backwound silk to stand several hours, how do you prevent sticking of yarn?

5th. Will a very soft wound cone prevent this?"

CONTRIBUTOR NO. 4125.

Underwear Knitting and Cutting Waste

EDITOR COTTON:

I have read with interest the letter on page 103 of the November number of COTTON with reference to knitting and cutting waste in underwear.

Theoretically, what this contributor says about knitting waste is all right, but in the everyday work in the mill it does not work out at all. He says that there should be no knitting waste, that the flyings from the yarn from knitting machines are so inconsequential that it would be impossible to figure the amount, and that if the knitting machines do happen to cut an excessive number of holes in the cloth, it is due to carelessness of the men in charge of the knitting machines, and such waste should be figured in the cutting department, where it is really decided what is best to do with the cloth at the time when it is cut into garments.

I would infer from his letter that he gets a pound of cloth for every pound of yarn that goes into his knitting room. If he does this, will he please tell us how? What about the yarn ends that the knitters pull off from the cone when they run down low? What about the press-offs? The best of them have them sometimes, and surely they are not charged to the cutting department. What about the ends of cloth where the pieces are sewn together? This is not cutter's waste, although it winds up in the cutting department. What about evaporation in knitting, or does he use humidifiers in his knitting mill? In the cutting room does he find it possible to cut up every scrap of cloth that is trimmed off for shaping union suits?

As a matter of fact, according to our experience, there is just about an average of two per cent loss in the knitting department, and ten per cent loss in the cutting department of our mill, and we figure that we use practically everything but the paper and cones in making up our goods.

I would be very glad to have "CONTRIBUTOR NO. 4046" discuss this question further, and I feel sure that it would be of interest also to other underwear manufacturers.

CONTRIBUTOR NO. 4104.

Disagrees With Baxter on Degumming.

EDITOR COTTON:

I have read with much interest the very instructive article by C. H. Baxter, on "Sleazy Knitting," appearing in the November issue of COTTON. He covers the ground very thoroughly and shows very clearly that he knows what he is talking about up to the last paragraph, in which he discussed dyeing and degumming. I am glad he qualified his statements, in this paragraph, by admitting that he knew absolutely nothing about dyeing hosiery. If he had not done so it might have caused some of his readers who knew something about dyeing and nothing about knitting to have misjudged the value of the whole article. In defense of Mr. Baxter's article, I will say it was fine so long as he "stuck to his knitting."

In the example he cited for illustration one dyer degummed in a tub using only a good grade of olive oil soap, while the other degummed in the machine

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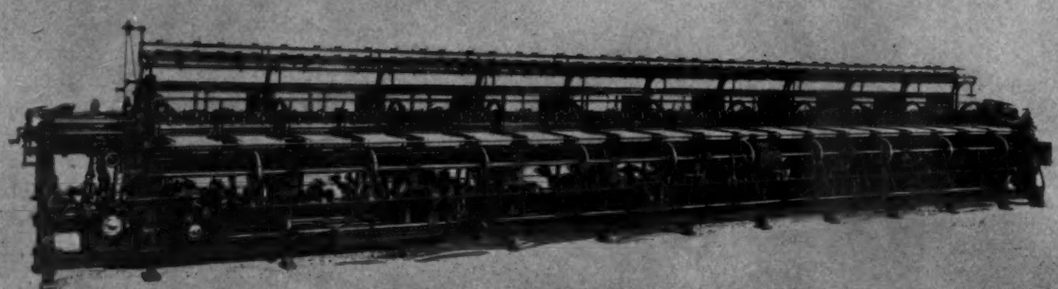


READING

FULL-FASHIONED KNITTING MACHINES

and used boil-off oils. This to my mind explains the whole trouble. I think that if the dyer degumming in the tub had used the boil-off oils the machine man used, and the machine man had used the olive oil soap the tub man used the results would have been reversed.

I am sure that Mr. Baxter will take no offense to my very frank criticism. I know he has a sincere purpose in writing these articles and that purpose is to give to the readers practical and worthwhile information. Now, in my judgment he has given the readers the wrong information on degumming, for I believe the method of degumming in tubs is more obsolete and impractical than the full-fashioned machine he referred to which had to have cup grease packed in the jack heads because of a lack of jack springs.

The purpose in degumming silk hose is obvious: to remove the gum and to remove it thoroughly and uniformly. If this is not done the dyeing and finishing will not be satisfactory. To remove the gum completely and uniformly it is necessary to agitate the goods either by poling the goods in the tub or turning them in a dye machine. It requires the same action to remove the gum uniformly as it does to dye the goods uniformly. It would be interesting to see a batch of goods that were dyed in a tub with the pole method. The objective of the dyeing machine builders has been to build machines that would penetrate more thoroughly and put the color on level. The better a machine will dye, the bettter it is adapted for degumming. It would be just as absurd to degum the goods in a tub and transfer them to a dye machine to dye them, as it would be to degum them in the dye machine and transfer them to a tub to dye them.

Many of the so-called degumming oils are a curse to a silk dye house. They contain strong alkalies such as silicate and soda ash and the action on the silk is too stringent. Others are so weak the goods are worn sleazy by the time it takes to degum them. The sleazy appearance can be produced by over degumming; by running the machine too long; by overloading the machine; by running the machine too fast; by not maintaining the proper water level in the machine, or by any other causes that would contribute any unnecessary strain or friction on the goods. For this reason I strongly recommend the use of nets regardless of the finish of the machine.

The best results can be obtained by degumming in soft water with a good olive or oleic soap combined with a small amount of alkali. The amount of soap to use depends on the nature of the silk and the weight and construction of the fabric. A sufficient amount of soap should be used to remove all the gum at a slight boil in 40 to 60 minutes time. The goods should be rinsed through three waters. The first two waters should be hot and the third one cold. It is well to overflow the machine the first time to float off the surplus gum in the bath. The goods should then be hydro-extracted and the goods shaken up before dyeing. If the proper method is followed in degumming and dyeing in the latest type model metal rotary dyeing machine the best results can be obtained, and no one should hesitate to use the dye machine for degumming.

To speak of sleaziness and crepe stitches as the same defect is an error. Sleaziness is uniformly loose knitting, while crepe stitches are a distortion of the stitches and are caused by a lack of compensation between a certain group of stitches which may be produced in closely knitted fabrics as well as loosely knitted fabrics. It is caused by a lack of perfect control of the thread while the stitch is being formed. Therefore, it is made on the knitting machine and not in the dyehouse. The dyer may contribute to its relief to a certain extent, but he cannot cause it. Distorted stitches caused by tangled goods or too much extracting, finger marks or twisting in the boarding room are entirely distinct from crepe stitches formed in knitting and should never be confused.

CONTRIBUTOR NO. 4113.

Foremen.

EDITOR COTTON:

There are several kinds or types of foremen; three especially, the "easy" kind, the "hard boiled" kind, and the "reasonable" kind.

First we will take the "easy" kind. He is too easy; also too good to his help, in a way; too good and too soft hearted. He lets the employees do as they please. He lets them rule him rather than ruling them. These hands get around him and each other. They try to "put something over" on the boss.

We will next take the "hard boiled" type of foreman. He is the wrong kind also, and in some respects worse than the one just described. He loves to show his authority. About the only thing he cares about is to be in a position where he can drive his employees around, carry a bunch of keys and wear a white collar. He has an idea that the place would shut down if he were to quit. This kind of a boss won't listen to reason. He thinks himself above any other person in the mill. If an employee goes to him with a reasonable question he loses his head; he cannot control his temper, but goes all to pieces. He bawls the hand out and preaches him a sermon. This type of boss will not let anyone tell him anything, as he thinks he "knows his stuff." He will not listen to anyone unless it is some superior. This kind of a boss never accomplishes anything much. In a short space of time he will practically ruin the company for which he is working. He makes enemies for himself, which is about the only thing he does successfully. In general, he accomplishes very little of a worth while nature.

Then there is the "reasonable" kind of foreman. This is the *real* type of boss. He is good, kind, and has an encouraging word for all of his employees. He has a cool head, excellent control over his temper and tries to push his help along in every way possible. He makes new friends, in addition to holding old friends. When a person goes to this type of boss for information he will do his best to be of service. Another good point about him, he is not partial, but is fair and square to all. He does not have any pets or favorites. He sees to it that all hands know their duty and perform it. He is a "go-getter", "brings home the bacon" and keeps the old mill running.

"Easy," "Hard-boiled" and "Reasonable," but the greatest of these is "reasonable."

CONTRIBUTOR NO. 991.

There can be waste in SEAMING

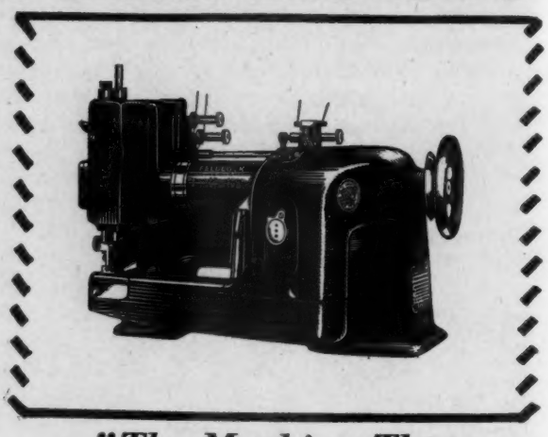
Stop it with the FELDLOCK

IF your volume of seaming is too small it constitutes a waste. And that means a money loss.

The obvious remedy, of course, is to increase production. There is a Willcox & Gibbs Machine that does this on every class of felling . . . the Feldlock.

The Feldlock is the original feed-off-the-arm machine and constitutes the highest development of this principle. It *increases* production. And in *quality* of work it also meets today's competitive conditions.

The Feldlock booklet describes and illustrates this economical machine. May we send you a copy?



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Sole United States and Canadian agents for the Cornely and Uniart Embroidery Machines.

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HOME OFFICE: 658 Broadway, New York, N. Y., U. S. A.

WRITE OUR HOME OFFICE FOR SAMPLES MADE ON THE FELDLOCK, OR SUBMIT YOUR OWN FABRICS FOR SAMPLE PURPOSES

Plaiting Trouble on Pointed Heel Stocking.

EDITOR COTTON:

On our Scott & Williams Model K machines, 260-needle 3½-inch, we are producing a pointed heel stocking. The attachment we are using is the six finger affair. We are having plaiting trouble on going inside of pointed heel. The yarns we are using are eight thread pure Japan silk for the body yarn and 120s mercerized for the plaiting yarn. Our difficulty lies in the fact that we can get good plaiting by putting an enormous tension on the body yarn, but by so doing, we are wearing out our needles and sinkers in a very short time. The fingers and throat plates become grooved and cause us no end of trouble. Due to the heavy tension on our silk yarn of course cut-outs occur on yarn changes, etc.

Our plaiting thread has no tension whatsoever. Our yarns have the proper spacing as they are fed to the needles, and so far as mechanical adjustment is concerned, everything is as perfect as we can get it.

We appreciate the fact that the pointed heel finger is closer to the silk finger than is the sole finger. We have no trouble in our double sole plaiting, due to the fact, of course, that this finger is the first finger to the left of the throat plate, and the pointed heel is second from the left; the difference being at the division of the yarns at the knitting point.

What I would like to know is this: Is it practical from the viewpoint of results in production to try to produce a stocking made in this manner? Any comments which your readers will make, or any suggestions that they may offer, will be of interest to us.

CONTRIBUTOR NO. 4109.

Keeping Sizes After Oiling.

EDITOR COTTON:

I notice in the August issue that "F. R. (TENN.)" has trouble in keeping his ladies' hose on size from the Banner machine on string work, especially after oiling. There are several causes for this: (1) improper setting of the take-up; (2) stiffness in the upright stitch cam bar; and (3) unevenness in the yarn or poorly wound cones or bobbins.

The take-up on the older type of Banner machine is positive in its action and acts irrespective of the tension placed on the string of the stockings. This should be set so that the pull is not so great to cause lengthening of the stitch. Too much pressure on the rollers will cause the tension to be uneven at times.

The second point to notice is the upright stitch cam bar. If this becomes choked with lint or for any reason does not drop of its own weight; the result is sure to be uneven work. The upthrow cam following the rear stitch cam should be set as close to the stitch cam as the free passage of the needle butts will permit.

Carded yarns often vary in size in different parts of the cone due to certain of the bobbins or cops being spun under different conditions. Any lack of uniformity in the cone will show up immediately in the work. A poorly wound cone or disturbances in the tensions as the threads are being fed will cause variations in the size.

V. C. (N. C.)

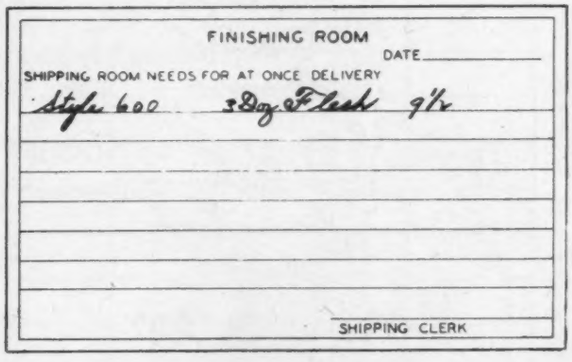
Reducing Shipping Complaints.

EDITOR COTTON:

I have been reading COTTON for a number of years. The "Knitting Kinks" department is indeed interesting. Questions are asked, What will stop a looper from stripping; a Model K from cutting holes in gores, and many other things, and I believe every question is clearly answered. I think the editor, or whoever suggested this department, must know that we fellows have our troubles, just the same as carders and spinners.

However, I have not seen very much in these columns about shipping that I can recall. The shipping room is usually under fire from the office. I am writing from hard personal experience and not drawing on my imagination. Of course complaints are going to be had, for when a human being gets perfect here on this earth he will be removed to help run the business up yonder.

I am herewith furnishing sketches of order blanks. Of course a mill making children's, ladies' and men's goods will need a form with all sizes. It will be noted that in the size margin I start at size 5, etc., which is children's. Drop down one margin and begin at size 8, etc., which is ladies' goods. Drop one margin and start at size 10, etc., men's goods. In other words an order for children's, ladies' and men's hose can be put on the same blank. A checking column should be left on the order so it can be double checked before it is shipped.


FINISHING ROOM

DATE_____

SHIPPING ROOM NEEDS FOR AT ONCE DELIVERY

Style 600 3 Doz Flesh 9½

SHIPPING CLERK

Finishing room "Rush" form. Print on light Bristol board in any convenient size for filing.

It is very important that an order be filled accurately. Too many shipping rooms haven't enough room. To be accurate, there should be enough racks around the room to hold the stock. This will enable one to tell at a glance, upon receiving an order, whether or not there is enough of a certain color on hand with which to fill the order. After checking up an order if you find you lack some, then use the card to the finishing room, properly filled in.

I have seen fellows line out an order on the floor, and they would have to almost stand on their heads to check it up.

Tables should be provided for lining out orders.

A. B. C. HOSIERY MILLS
MANUFACTURERS
JESUP GEORGIA

SALESMAN_____ DATE_____

ACKNOWLEDGED_____ CUSTOMER'S ORDER#_____ ORDER #_____

APPROVED_____ DEPT. #_____ TERMS_____

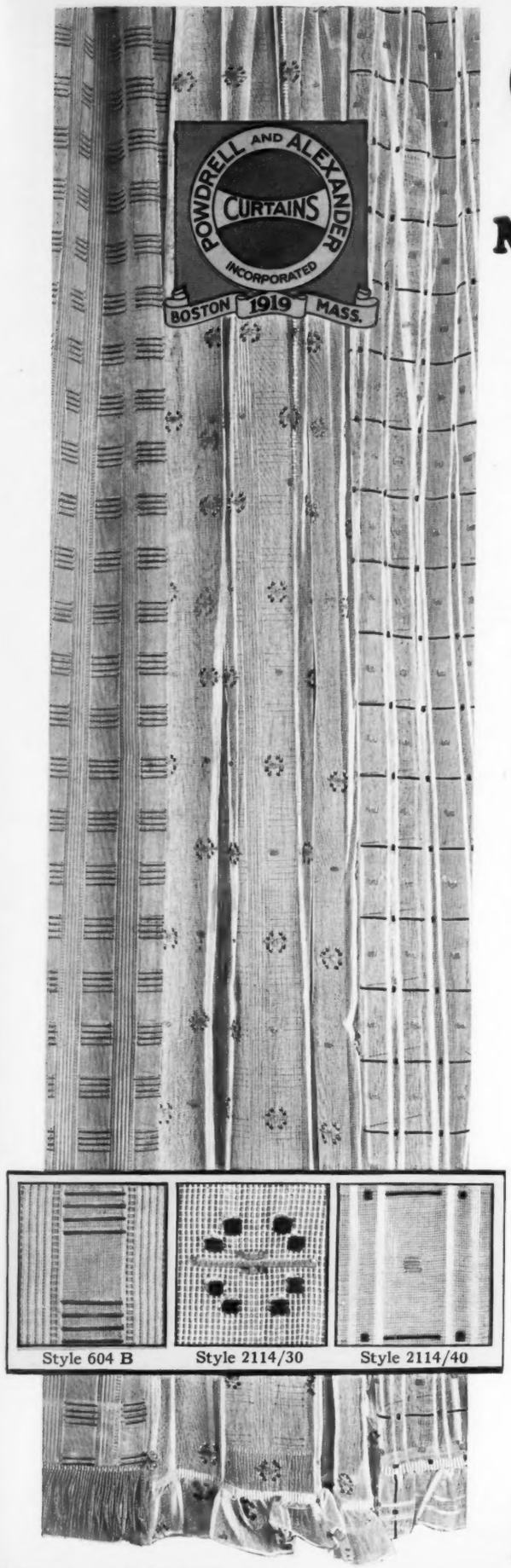
SOLD TO M. F. G. Co.

ADDRESS 706 – 6th Ave. Chicago, Ill.

WHEN SHIP VIA BUYER

STYLE	DOZ.	COLOR	5	5½	6	6½	7	7½	8	8½	9	9½	10				
"	"	"							8	8½	9	9½	10				
"	"	"											10	10½	11	11½	
200	10	White								2	3	3	2				
	2	Black								½	½	½	½				
	4	Alesan								1	1	1	1				
	1	Gun Metal								¼	¼	¼	¼				
	2	Thrush								½	½	½	½				
	2	Parchment								½	½	½	½				
	2	Nude								½	½	½	½				
	2	Fleah								½	½	½	½				
	1	Moonlight								¼	¼	¼	¼				
	2	Peach								½	½	½	½				
	2	Dawn								½	½	½	½				
	30																
87	2	Black				½	½	1									
	3	Piping Rock			1	½	½	1									
	3	Beige			½	1	½	1									
	2	Champagne			1	1											
KD.	25	Blue Mix.											8	7	5	5	
	20	Bro. Mix											5	5	5	5	
	20	Blk. & White											7	3	3	7	
	15	Green Mix											3	5	5	2	
	20	Yellow Mix											9	5	4	2	

A Convenient Order Blank with Shipping Instructions.



Style 604 B | Style 2114/30 | Style 2114/40

color, the MASTER SALESMAN

PACO CURTAINS, manufactured by Powdrell & Alexander, Inc., of Boston, Mass., are acknowledged to be one of the fastest selling lines in the country. What makes them sell? Color! Rich, vivid, and daring hues and subdued, dainty shadings, in clipped and dotted effects, on neutral grounds, give Paco Curtains the eye-impelling attractiveness that spells sales.

This attractiveness is lasting, too, for all colored yarns used in these curtains are dyed with Fast-to-Bleaching shades (vat colors) by the Franklin Process. These colors are the fastest known, to washing, light, and all color-destroying agents.

The outstanding success of Paco Curtains is typical of the experience of many manufacturers using Franklin Process Colored Yarns.

We have prepared a portfolio showing full-color reproductions of some of these fabrics, which every creator and manufacturer of yarn-dyed fabrics will find interesting. Shall we send you a copy? Just say you want it.

FRANKLIN PROCESS COMPANY

Largest Job Dyers of Yarn in America
also Yarn Spinners, Manufacturers Glazed Yarns, Dyeing Machines

A FRANKLIN PACKAGE OF DYED YARN

It will deliver freely, either by rotation or over end, substantially lowering winding costs.

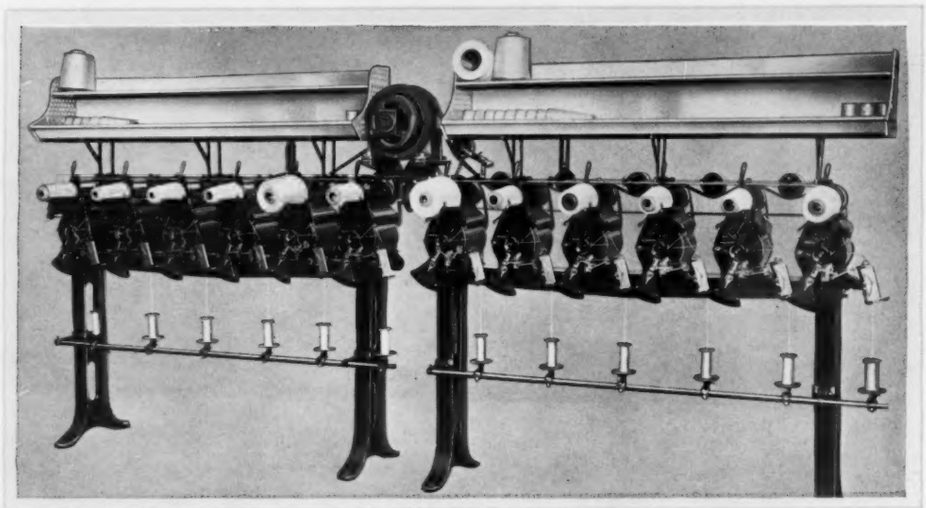
PLANTS
PHILADELPHIA PROVIDENCE DENTON, ENG.
New York Office, 66 Leonard St. Chicago Office, 222 W. Adams St.
SOUTHERN FRANKLIN PROCESS CO., Greenville, S. C.
CENTRAL FRANKLIN PROCESS CO., Chattanooga, Tenn.
FRANKLIN RAYON DYEING CO., Providence, R. I.

FRANKLIN PROCESS

Commission Dyeing of Yarn in the Wound Form

Ad No. 230-A. Printed in U. S. A.

JUMBO CONES



WINDING FIBRE SILK FOR KNITTING

No good manufacturer of knit goods would even contemplate knitting from a small supply like a cop or bobbin, for two fundamental reasons: first, the supply would be too small, and second (and more important), in drawing off from knitting supplies of small diameters, the material must unwind rapidly, due to the fact that one wrap represents but a very short length of yarn.

The ideal knitting package of fibre silk is a cone of 5¾″ traverse, built on a large diameter cone tube, as represented by the "Universal Jumbo" cone wound on the "Universal" No. 50 machine.

The empty cone tube has an average diameter of 2⅞″, and the outside diameter of a three-pound cone when wound is 5⅝″. The three-pound cone represents the maximum recommended for fibre silk, and naturally cones of smaller diameter and less weight may be wound, if desirable.

Starting with this large-diameter cone, the wall of fibre silk on a package containing three pounds net is but 1⅜″. Glancing at the illustrations above of "Jumbo" cones, you will readily appreciate the assurance of even tension when knitting from a package with large circumference, and with none of the impediments to delivery common to bobbin types of winding.

The "Jumbo" cone, the latest product of the "Universal" No. 50 winder, is the result of exhaustive study and careful development by the Universal Winding Company, collaborating with the manufacturers of fibre silk, and with the knitters of this material.

LEESONA

UNIVERSAL WINDING COMPANY

PROVIDENCE CHICAGO, UTICA NEW YORK BOSTON MONTREAL AND HAMILTON, CANADA PHILADELPHIA CHARLOTTE ATLANTA

DEPOTS *and* OFFICES *at* MANCHESTER *and* PARIS

UNIVERSAL WINDERS

Ad No. 22. Printed in U. S. A.

IMPORTANT

This Shipment Has Been Checked Carefully And Contained When Packed:

.....Boxes of 8 Pairs Each
.....Boxes of 6 Pairs Each
Empty space, if any, has been filled with paper.

In case of a possible shortage, return the container and notify your local agent of the carrier, who will make an inspection. All of our shipping cases are securely strapped with iron banding. If a corrugated carton is used, the flaps are glued together and the joints are sealed with tape imprinted with our firm name.

Although a corrugated carton may reach you in apparently good order, merchandise may have been extracted:
By removing the printed tape and replacing the same with plain tape.
By removing the muslin tape which is glued over the edge where the two ends of the one-piece carton are joined and by replacing this tape.
By cutting into the carton and by sealing the opening with plain tape.
Shipments are known to have been pilfered by these and other methods.

A B C Hosiery Mills.

A printed form 8½ by 11 inches in size and worded like this is enclosed with each shipment.

Suppose we are going to fill an order for 30 dozen hose in ¼ dozen boxes. We go to our racks and get the different colors and sizes specified on the order; or at least we think we have it right. It is very easy to be wrong. We look at our order, then we check the sizes, then the style and then the color. If this is done one cannot go wrong. Don't get in too big a hurry. After checking all the order then count the boxes. If there are 120 boxes there will be 30 dozen. There is a case or carton to hold the 120 boxes. Be sure that there are 120 full boxes. Pack them in, one box at a time, and if there happens to be an empty one it will be found. If it is found, a complaint from a customer is being forestalled.

It is best to take time and ship right. I was surprised at the complaints which were cut out by being accurate in shipping.

Sometimes a customer says he is two boxes short. I have a printed form which I fill in as the number of boxes is counted. I also use gummed tape with the mills' name on it.

I would suggest that if any of the readers are having shipping troubles that they just try out these suggestions and they will see that their mistakes will be cut to a minimum. H. H. W. (GA.)

Running 30s on 11-Cut Underwear Machine.

EDITOR COTTON:

I note the inquiry in "KNITTING KINKS" from an underwear man who stated that he was having difficulty with unhooks in trying to run 30s K.P. yarn on an 11-cut ribbed underwear machine at 28 stitches per inch.

It must be admitted that this is a rather tight stitch, and I will say that I have had experience in running 30s on an 11-cut machine and have been able to produce a good fabric in the following manner:

Lower the dial just as close to the cylinder as it will run. With regard to the timing, advance the dial until, by turning the machine by hand, the cylinder stitch cam will pull down six or seven needles before one starts back up pulling the short stitch. Adjust the guides on thread carriers closely and use 42 hook needles. This should give a good tight cloth.

M. M. (TENN.)

Effect of Spreaders on Underwear.

EDITOR COTTON:

There is one question which I believe would be interesting to underwear manufacturers who read your Knitting Section, and that is the question of spreaders used on knitting machines, for the purpose of giving width and tension to the cloth as it is knit, and taken up on the roll from the cylinder as the knitting progresses.

We should like to know what bearing, if any, the taking in or letting out of the spreader may have on the finished width of knitted ribbed underwear cloth after bleaching.

In conducting some experiments recently, we have found that on one or two machines used, that letting the spreader in gave much better knitting results and as far as we were able to observe, did not affect the stitch or the finished width of the cloth after bleaching.

We should like to have the opinion of other manufacturers on this point, through the columns of "KNITTING KINKS", and would appreciate their giving their ideas on it when this letter is published.

CONTRIBUTOR NO. 4111.

Routing Retail Fancies Through the Mill.

PREPARING THE SAMPLES

EDITOR COTTON:

In a recent issue, "CONTRIBUTOR NO. 4027" asks for information on routing fancies through the mill. This is a question I have wanted to read about and talk about for a long while. I am going to give my method of doing this, and if anyone knows a better way I would like to hear from them.

In manufacturing fancy hosiery of any kind the first thing to be made is the pattern. The best way that I have found to get out new patterns is to have a special room for this work. The room should be large enough for as many machines as are needed for making samples; the size of the room depending upon the size of the mill and the number of patterns that are to be made.

If the mill is a small one and needs only one new pattern every week or two, the head fixer could make the designs and set the machines up and run the misses' and children's work. An operator is needed to knit the half-hose samples as these have to be topped and transferred to the machine. If the machine is one that makes its own tops, such as a Scott & Willaims Model H H, the fixer could take care of the samples while he does the work that is necessary in any sample or experimental room.

If the mill is a large one and can afford an expert fixer and an operator in the sample room all the time, much better patterns can be made, as the more experience a man has on this kind of work the better he gets. I have noticed that most mills have someone whom they call the designer, usually one of the salesmen or one of the executives who has not had any actual experience on the fancy machines and does not know the possibilities of the machine. These men with few exceptions get the credit for the work of some good fixer

President: *"... and we'll have the new box tops lithographed by Kaumagraph."*

Vice-President: *"Kaumagraph? Why, I thought they only made trademark transfers."*

President: *"Certainly not . . . they've got a lithographic plant that's one of the best in the business."*

FOR over five years Kaumagraph's Lithographic Department has been originating and executing lithographed hosiery packing, box tops, etc. for many prominent manufacturers. An unparalleled knowledge of identification requirements has resulted in the creation of a new type of hosiery packing—*packing that packs a sales appeal!* Our Service Department is at *your* service.

KAUMAGRAPH COMPANY, 200 Varick Street, New York City

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who has taken interest in the fancy machines and understands them.

I think that it would be a good idea for the mills that are making fancy hosiery, and intend to stay in the game, to train a young man for the designing of new patterns. The man for this job should be the best and fastest fixer in the mill, he should be interested in fancy and experimental work and one with a fair education, who is willing to learn and study.

The fancy game today is not what it was a few years ago when machine builders first began to build fancy attachments for their machines. Up until 12 or 18 months ago most any kind of pattern would sell, but since so many mills have begun making fancy hosiery a pattern must be something different, with the right color combinations, to bring out the most artistic effect.

To get a line of color combinations it is necessary to run several matches of different color combinations. These matches should be long enough to get the whole pattern, but need not be any longer—six or eight inches is long enough. Next lay the maches out on a table, which should be in the sample room for this purpose, and pick as many of the combinations as are needed for the samples, eight to fifteen are enough for one pattern. After the color line is selected the samples should be made and each sample should be numbered. A match should be kept at the mill with a line number on it for reference.

Sometimes good color combinations can be taken from some other pattern that has the same number of colors; this is the quickest way and easiest way to get a color line, but I would always use some new colors in a new pattern.

CONTRIBUTOR NO. 4255.

Breaking Strength Before and After Bleaching.

EDITOR COTTON:

We have a question on knitting practice which we would be glad to have discussed in "KNITTING KINKS". The question is: what difference is to be noted in the breaking strength of knitted fabric after bleaching. By breaking strength, I mean the breaking strength in pounds along the wales obtained by placing a 3x1-inch piece of cloth between a pair of 1-inch jaws.

I would like to have any of your underwear readers give us the results of any tests they may have made along this line.

CONTRIBUTOR NO. 4112.

New Standard Full-Fashioned Length.

A new standard length of 29½ inches, with a tolerance of ½-inch in both directions, has been adopted for women's full-fashioned silk hosiery by the National Association of Hosiery & Underwear Manufacturers.

Members of the association overwhelmingly rejected the new standard lengths for this class of merchandise proposed a month or so ago. These proposed standards of 27 and 29 inches, according to size, were felt to be impractical by most manufacturers.

It was agreed that one standard length, with the usual manufacturing tolerance, would be more satisfactory, and it is generally felt that the new standard of 29½ inches will be most satisfactory to all concerned.

Dyeing Silk Plaited on Wool, With Mercerized Top and Foot.

EDITOR COTTON:

I would like to know what is a satisfactory method for dyeing a hose made with a mercerized toe, heel and ribbed top, and a boot of two thread gummed silk plaited over 1/50 wool yarn. We have been running a boiled-off silk, but because of knitting trouble, we wish to change to a gummed silk, while still securing the luster of the silk and leaving the wool in good condition.

Any information which your readers can furnish, giving us the proper method for dyeing this new stocking, will be appreciated.

CONTRIBUTOR NO. 4115.

"Don'ts" for the Knitting Mill.

EDITOR COTTON:

I am giving you below a list of "Don'ts" which I have found to be of use around a knitting mill:

Don't watch the clock—there's a whistle to notify all of stopping time.

Don't neglect your work—the boss is watching.

Don't find fault continually—nobody admires a fault finder.

Don't complain to the fellow next to you—go to the boss.

Don't run to the boss with every little thing—he won't appreciate it.

Don't be late for work. You have your time sold. Give full measure.

Don't be away from your work unless it's absolutely necessary.

Don't try to be funny—it's disgusting.

Don't knock your fellow workers. The world hates a knocker. Be a booster.

Don't throw fruit peels on the floor. Someone may slip and break a limb; it's dangerous.

Don't pretend to be a "know-all." Folks will laugh at you.

Don't express your opinion on anything unless asked to do so.

Don't be afraid to ask for a change in work if you think it better for you.

Don't mind asking about your work. It is no disgrace to ask when you are not certain.

Don't clean machines with waste on your hands. Just hold the waste so if it is caught you can turn it loose, otherwise you are likely to lose some fingers or a hand.

Don't fool with starters and switches—you may get too many volts and cease to function.

Don't leave water running. It costs money.

Don't carry matches at your work—you may burn your job up.

Don't let your job run down—run it or it will run you (out).

Don't get it in your head that you are the only one that can do so-and-so—there's always someone just a little better and he is apt to be along most any time.

H. H. W. (GA.)

SILVER

KNITTING ARTS EXHIBITION

Commercial Museum. Philadelphia, Pa.

APRIL
15
APRIL
19

97% SOLD!

When the first allotment of space in the Silver Jubilee Knitting Arts Exhibition was made a few weeks ago, 97% of the total display space was marked sold. This is the first of the records to be shattered by the 25th Anniversary Exhibition, since never before has the first allotment reached such a high figure. The remaining 3% will be sold long before the opening date of the show. All this points to another record to be broken; that of attendance,—as the eagerness of the manufacturers to exhibit always parallels the eagerness of the trade to visit Commercial Museum during show week. The entire knitting industry realizes the technical value and educational possibilities of this exhibition which has been constantly improving for a quarter of a century. If you wish to exhibit, telegraph us right away at 329 Park Square Building, Boston. And if you are going to attend in person as a visitor, reach up and mark the dates on your calendar pad.

PERSONAL DIRECTION

Chester I. Campbell

Auspices National Association of Hosiery and Underwear Manufacturers

JUBILEE

The Knit Goods Market

WHAT may be referred to as phenomenal activity characterized the markets for hosiery during the six to eight weeks preceding the end of 1928. It was a year of a somewhat prolonged lean period and a comparatively short one of briskness such as had no parallel in any recent twelve-months. The slack of Summer seems to have been wholly taken up in the extraordinary demand of November and December, when it was shown that, instead of an oversupply of full-fashioned silk for women, there was a shortage for such deliveries as dealers were calling for.

The strength of the market for full-fashioned hose was indicated in the steadiness of prices notwithstanding many of the more favorably situated mills in the matter of operating cost had a wide outlet for their product at prices which as a matter of necessity had to be maintained by manufacturers saddled with higher costs. There appeared no price competition as between the two classes. In respect to value, sectional lines were for the time eliminated, and it was significant that mills burdened with the maximum cost sold production and declined some attractive business for December, while booking orders for deliveries running through the first quarter of 1929, which promises as strong a start as the finish of 1928.

The year just ended was full of perplexities for manufacturers and jobbers, the latter deferring much of their buying until very late, leaving manufacturers to carry stocks. Weather vagaries of course had much to do with the shaping of events in the heavy weight underwear trade, and leave as an open question the extent to which distributors this year will pursue the policies of 1928.

Knitted outerwear has had only a fair start for this year. Most manufacturers are well satisfied with their 1928 volume of shipments and there is heard much confidence that 1929 sales will show an increase over last year.

Demand for Silk Hose Runs Ahead of Spot Supplies

ALTHOUGH there was a substantial increase in output of full-fashioned stockings for women in October as compared with both the corresponding month of last year and September, 1928, production appears to have been absorbed. There was more of night time operating of plants than in the Fall of 1927, and according to a number of manufacturers, there are no indications of any let-down. A representative small mill shows undetailed orders for an aggregate of 10,000 dozens to be delivered before May. A representative large mill also has sold well ahead, the directing head calling on the company officials for additional machinery. Both sell direct to retailers only.

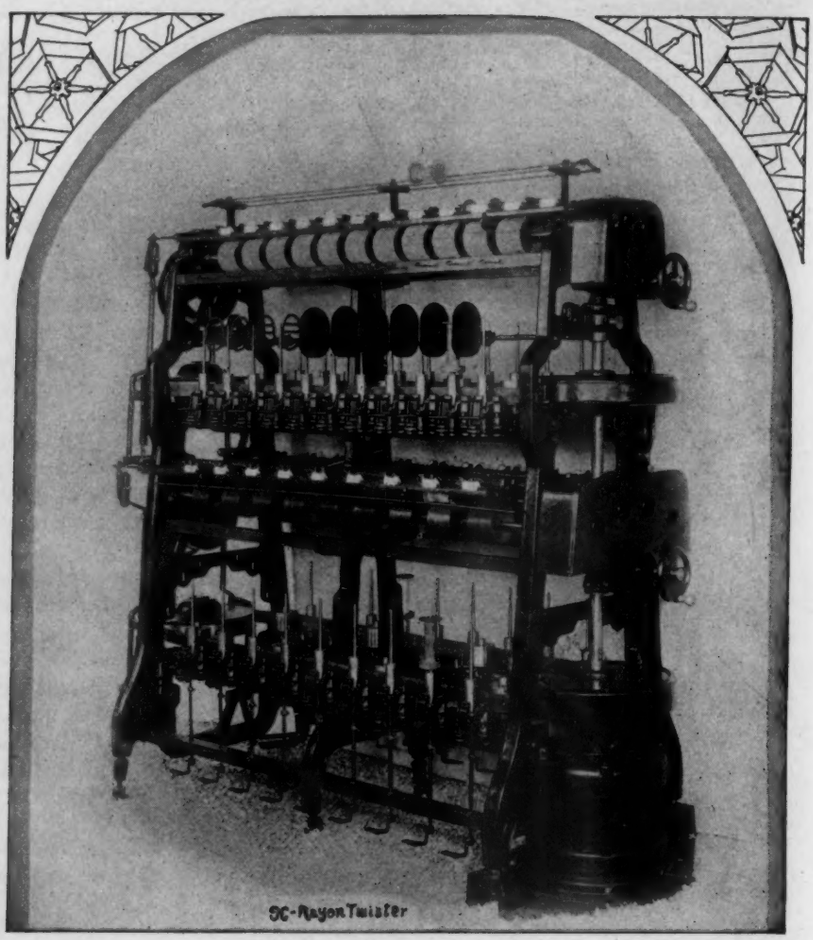
Another optimistic class comprises large and small concerns professedly distributing through jobbers exclusively, but quietly bidding for the business of large retailers, and getting it. This closing of the eyes to demarcation lines in distribution is becoming increasingly common. The admission "We sell to anybody that will pay the price" is not rare, and may be heard more frequently with the growth of chain store organizations and jobbers operating with mills on virtually a retail basis. Even some of the more powerful manufacturing concerns are giving more elasticity to their conscience in matters pertaining to distribution.

Hosiery sales necessarily have enlarged by reason of wide exploitation of dollar a pair goods. Price stimulated consumer buying and, generally speaking, meant less service, doubtless three pairs in this class being required to give the wear of two of standard grade, or an increase of 50 per cent in the requirements of women using the lower price hose.

In a summing up it would appear that no one was seriously hurt by the enormity of the business in dollar lines, for fine gauge mills all have been steadily engaged to beyond single shift capacity and still are, and there was more employment for operatives. Present demand for 39-gauge used machines indicates a purpose to continue marketing stockings for the nimble dollar, and the fact that manufacturers disposing of their 39 are replacing them with 42, 45 and 48, indicates that in the fine gauge field there must be seen prospect of increasing demand. A southern mill is installing 39s bought in Philadelphia, and northern manufacturers are looking for bargains in second hand equipment of this gauge.

A North Carolina mill executive commenting on southern installation, says he believes that field is stacking too heavily on fine gauge silk hose. He feels that the South might fare better by confining production mainly to 42-gauge and coarser, leaving the fine for the northern field. Those taking issue with him maintain that coarse is headed toward obsolescence and within a comparatively few years will bear about the same relation to fine as does seamless to full-fashioned. A machine builder makes the boast that machines erected "a generation ago are still making hosiery that is bought and sold today," a claim that sounds well alike for the builder and the producers of coarse gauge stockings.

The fact that two Philadelphia department stores and an exclusive specialty shop which for a time featured dollar regulars of full-fashioned silk, both chiffons and medium service weight, have taken them off sale, is regarded by some factors as pointing to a narrowing market for dollar goods. The lines were discontinued for the reason, first, that hose satisfactory in quality did not yield a proper margin of profit, and that its sales lessened the outgo of more profitable lines. The store taking the lead in removing dollar stockings from sale will have as its only full-fashioned, for that price, silk in twist with rayon, and Bemberg service weight. Pure thread silk irregulars will be shown only in the basement department. According to a buyer for the store, many shoppers were prone to



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look upon the dollar price tag as an insignia of irregulars. This reflected on the store and was thought to have had an adverse effect on sales generally.

If the action of the stores mentioned as having discontinued offering dollar full-fashioned silk shall be followed by any material number of retail establishments, it is held, Bemberg and rayon and silk in combination will be given a lift, and conditions in fine gauge circular knit will be improved, with emphasis on 300-needle hose of pure thread silk with pointed or otherwise novelty heel. In fact, some stores are using only 300-needle goods in place of low price full-fashioned.

More seamless silk was produced in October than in September, 1928, or in October of 1927, and a few mills in the South have taken some attractive business for 1929. It seems noteworthy in this connection that only a very few mills are successfully knitting spring needle hose. The Colonial, in Philadelphia, is the outstanding mill in this class, selling capacity production of a heavily equipped plant.

Comparing with a year ago, production of hosiery of all classes has increased in about the ratio that full-fashioned silk has gained and cotton lines lost. Sharp declines are noted in women's seamless rayon, rayon in mixture with silk and rayon plaited on cotton. The weakness in wool and rayon mixture is shown in a production recession of more than 50 per cent, comparing with October of 1927. Merchants had a carry-over of so-called silk and wool hose from last Winter, and bought late and lightly, and, basing predictions on weather to the end of Fall, they will be not likely to place bulky reorders.

Several full-fashioned mills in Philadelphia recently made up experimental lots of lisle hose knitted of 140s/2 yarn spun from Sea Island cotton. The yarn is from the mill of Boger & Crawford, Lincolnton, N. C., operating a busy mercerizing plant in Philadelphia. While the experiment is viewed as showing satisfactory results, the fine gauge full-fashioned lisle has yet to pass consumer test. Samples shown were knitted on 48-gauge machines, some of a slightly coarser gauge. The stocking represents the nearest approach to French made lisle yet attempted by an American manufacturer, it is believed.

What Anklets May Mean to Fancy Heel Stockings

WOMEN'S anklets, which appear like outsize numbers of infants' socks, are engrossing the attention of about everybody in the hosiery trades, from retailer to manufacturer. It is the common belief they will be extensively worn, but distributors are putting them in stock very conservatively—no more than enough to give them a tryout. Comparatively few are seen in eastern cities, where novelties usually are approached cautiously. Manufacturers anticipate a strong Spring demand from the conservative East, and an expansion on the Pacific Slope.

The anklets are intended primarily to be worn over silk stockings of regular commercial types, for the sports effect. But there is some fear that as they initiated the bare leg craze in the Far West they may be used as substitutes for, rather than as a part of legwear, in many sections, notably at the coast resorts, and a few mills have announced the intention of making them with the first sign of approaching popularity. A question that enters the anklet situation and its outlook is, what is going to be the effect on silk hose generally and fancy heels specifically?

Women wearing anklets over their regulation stockings, it is suggested, will not much care whether their stockings have the square or fancy heel, as the short sock is just long enough to cover the heel. With pointed and otherwise novelty heel costing woman more than the standard square heel, it is held by some, she will give preference to the square construction, since she may reason that the use of the ankle sock imposes an additional cost that would warrant economy in the legwear proper. So, the little sockett has given rise to what may become a big question. That it will be taken up by the sporty element is regarded as a foregone conclusion.

Fancy Half-Hose Seen as Active Spring Item

PROGNOSTICATORS of a decline in demand for men's fancy half hose are again revising their guesses. They have missed so often that they are coming to be converts to the other view. Predictions that the very gaudy would be superseded by subdued design and coloring also are subject to revision, it appears from the selections being made by dealers for Spring. For the youthful element the extreme is again being specified, while for the really dressy of mature years the chaste seems likely to predominate. In a general way it looks as if there may be fewer colors and more attention to pattern.

According to mills selling to jobbers, novelty socks to retail for 25 cents are leading in sales, while those selling to retailers stress fifty cent numbers. As the latter maintain what is equivalent to a 48-hour delivery service and keep new designs following in close succession, they are regarded as being in such control that it has become difficult for wholesalers to obtain volume business in lines intended to retail for more than 25 to 35 cents, the volume decreasing as the price increases, say manufacturers supplying the jobbing trade. An upstate Pennsylvania mill is turning more of its equipment over to the production of really fancy 25-cent numbers and is turning off less of plain color pure thread silk. There was the usual increase in output of plain color silk for the Winter season, and sales for the holiday season showed a considerable gain. But fancies are declared elected for Spring and Summer.

The comparatively few manufacturers of very high grade novelty silk-rayon socks have a strong season ahead, judging from their advance business in lines for the dollar a pair bracket, and the extent to which some important jobbers have contracted would seem to refute the notion that the high priced comes from only mills selling direct to retailers. The Schuylkill Hosiery Mills, in Reading, reports sold well ahead of its silk-rayon numbers. It sells to jobbers through Shreve & Adams, Inc., while until quite recently the mill sold through its own organization.

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THE MODERN MARKING METHOD

If it's worth making, it's worth marking

The F. Y. Kitzmiller Hosiery Co., which is practically a reorganization of F. Y. Kitzmiller Sons Co., a few weeks ago emerging from a receivership, is another Reading concern featuring high grade fancies, distributing direct through retailers under Notaseme brand. This company has what appears an exceptionally strong line of half-dollar numbers. In women's hosiery it is knitting 300-needle pure thread silk with novelty heels, as its dollar number, and distributes full-fashion adapted to the entire range in the price field.

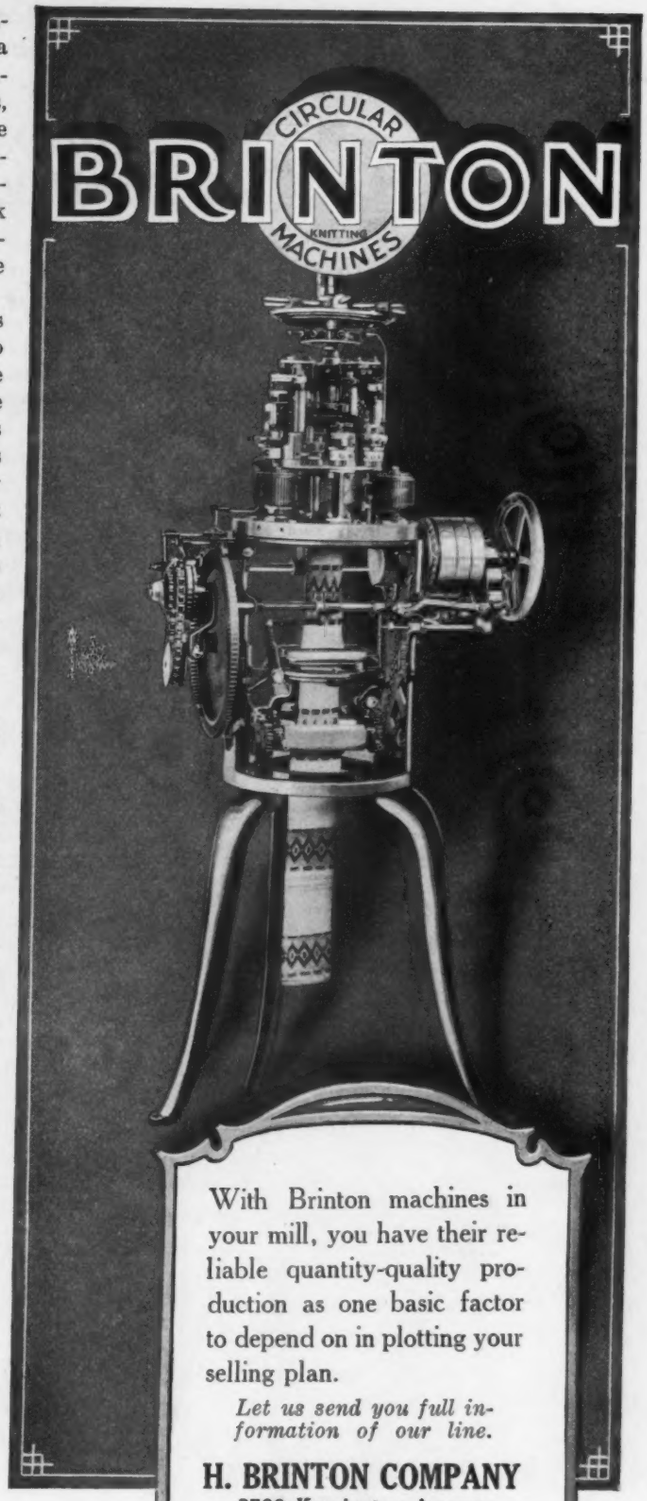
One of the busier manufacturers of men's fancies is the Gehman Knitting Mill, Bally, Pa., selling to large retailers through its office in Reading. The Gehman is one of not many mills knitting every size up to and including 13. Almost every order, it is stated, calls for a few size 12, which retailers say is not obtainable from all mills. Dealers state that many customers ask for 12s, not that men have larger feet than formerly, but that they have been suffering from a cramping of the toes which they ascribe to stockings being improperly ticketed as to size numbers of mills knitting but three sizes and boarding six, and improperly designating size on labels and rider tickets.

Big Potential Demand Awaits Juvenile Hose Mills

AN ADVANCE of ten cents a dozen announced recently on one mill line of infants' socks, while it failed to cause much comment, is viewed as evidencing a gradually tightening situation. Orders had been reaching manufacturers by fits and starts. As pictured by one leading concern, "There were weeks when we had to operate day and night, other times when we were content to have only one shift, and an occasional week when we might have closed the plant. It looks now as we will have a steady run until Spring."

Not only have more socks been contracted for than in the corresponding period, but mills have more detailed orders. "We have details for 50 per cent more cases than to December last year," said Sutton & Vande Water. While the larger jobbers have operated rather liberally, they have not covered for their requirements, and some of the small fry have bought little more than samples. There is, therefore, prospect of some lively contracting this month and next, and there seems no doubt practically all mills will sell every case of their late months output.

There appears some lagging in children's sports and full length hose in the higher price lines, while popular price numbers have been active and are promising of activity throughout the Spring delivery period. It appears that southern mills are taking the greater part of the business. The Belle Meade Hosiery Mills, Nashville, Tenn., was reported in December operating with double shift and adding 25 machines. The line embraces misses' sports and full length and boys' golf stockings. The Unique Knitting Co., Acworth, Ga., removed a year ago from Philadelphia, is credited with getting off and selling capacity production of over 400 machines. The company manufactures juvenile and sports hose, and is



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Made in 5. 10, 25, 50 and 100 lb. sizes.

STRICKLAND SAMPLE DYERS

reported having brought out a line of women's socks, or ankle hose, designed to sell for 25 cents a pair.

That there is something out of joint in children's hose for the higher prices is indicated by the closing down permanently of one of the Philadelphia mills for years regarded a leader in its class. It is stated by an executive that operating cost is around 35 cents a dozen higher than in some sections of the South for comparable hose, and that the overhead, which is exclusive of wage, is some cents a dozen more, due in large measure to taxes. The company has, at any rate, given up making stockings in Philadelphia, and for the same reason assigned by a manufacturer of women's full-fashioned for disposing of his plant.

A southern manufacturer of juvenile cotton hose who may be an exception has been selling rather heavily of misses' 28-ounce carded ribs, a trade description now not so frequently heard. "We have taken a surprising amount of business in the ribs," it was stated by a representative of the mill, which also is keeping men's low end cotton half hose on the map. "But we are not selling a great deal of women's cotton stockings," the mill spokesman replied in response to a direct question.

Underwear Primary Market Jolted by Weather and Cotton

THE attitude of underwear jobbers as expressed by some of the leaders who are believed to hold a close slant on sentiment among wholesale distributors generally would seem to indicate very little buying. There is heard satisfaction with the opening having been pushed back by a month and more from former years, and there probably would be little grumbling had mills refrained from naming prices until February. There have been manufacturer intimations of slightly higher prices, to which jobbers at once voiced determined resistance.

Heavy weight underwear trades in December narrowed to fewer and smaller orders. During the few days of snappy weather sandwiched between periods of a balmy Spring climate, there was a smattering of hasty reordering, showing badly shattered stocks among jobbers. That they have no 1928 underwear of moment on the year end inventory is apparent from the character of the repeat orders and insistence upon shipment within the day. There would be a scurrying for goods in the event temperatures for the remainder of Winter went low enough to even up for high registration thus far. But that seems to cause no concern among distributors, as they deduce from recent experiences that mills have merchandise ready to ship.

The pace at which some important jobbers operated for the current season is shown by the records of two manufacturers of non-competing lines, which disclose that some of their customers did not place initial orders until well along in October. Their reorders to the middle of December ranged in number from seven to twelve, and in cases from a half case to two or three cases. If this policy be adhered to, said an executive of one of the very large mills, "it will be but a few years before the jobber has disappeared as a distributor of underwear. As we've got

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There are large savings in labor as handling is reduced to a minimum.

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REGINA Silk Hosiery Co., Inc., Philadelphia, has sold its entire equipment of fifteen 39- and 42-gauge machines to the Charlotte Knitting Co., Charlotte, N. C., and, it is understood, will not again engage in the manufacture of silk stockings in Philadelphia, if at all. The machinery will be removed to Charlotte, and is expected to be in operation early this year. In explanation for the sale of the plant, an executive of the Regina company stated operating cost in Philadelphia is so high that it was difficult to meet competition from mills in territory where cost of producing stockings is considerably less.

Since closing its plant permanently a few weeks ago, Pilling & Madeley Co., Philadelphia, have decided either to liquidate the business or to remove the machinery to a southern city, probably Marion, N. C. The company started in business more than fifty years ago and its mill was regarded a landmark in the Philadelphia seamless field. Its product in recent years has been high-grade ribbed sports hose for misses and children and golf and athletic hose, and a comparatively short time ago a large installation of modern machines for knitting designs was made. F. E. Morris, an expert designer, is the general manager. The president of the company is Walter W. Taylor, of Shreve & Adams, Inc., New York selling agents, through whom the product of the Pilling & Madeley mill was sold from the time of its organization. Whether the company will liquidate or migrate is left to the stockholders, some favoring liquidation and others, removal to the South.

to carry stocks we might as well open up a number of distributing warehouses and sell direct to the retailers." That, in one form or another, is what probably is coming.

Representative jobbers make no denial of the allegation that manufacturers are left to carry stocks for their trade. But, one of the better known buyers for a wholesale establishment suggested, "Since it has come to be pretty well settled that under the modern plan of distribution mills must have ready to deliver stocks, why not make large shipments on consignment to selected widely scattered jobbers, so that they could compete with direct-to-retailer mills in matter of quick service? The manufacturer would be no worse off than if he had the goods in his own warehouse and jobbers would compete and keep on competing." With thoughts of this kind harbored by jobbers, the outlook for that oft-heard of cooperation with mills would appear not so rosy.

Manufacturers have maintained, and jobbers agree, that 1928 underwear prices were reasonably low and that an adjustment on higher cotton cost would be in order for 1929. But jobbers insist they could not get advances this year over last year's prices, that any increase would mean a deferring in contracts. This may be viewed in the light of distributor attitude generally toward early commitments, since, in addition, they professed to doubt that cotton would remain at the December level, from all of which it would seem that the opening might have been deferred to February without damage to the position of manufacturers. Many seasons that had a poor start finished strong. That of 1928 was an exception. Weather and cotton will determine the start for 1929.

About the time possibly higher prices for heavy weights were being discussed in a mild way, a Mohawk Valley manufacturer of bal briggan shirts and drawers, was reported having reduced the price by 12½

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FOR those 20 to 75 pound lots—that's where the American Underdriven Extractor comes in handy. The basket is placed at just the right height to permit quick and easy loading and unloading; the motor drive makes the machine self-contained, and ready to go at any minute; and it requires so little floor space you can fit it in any place. Write for details.

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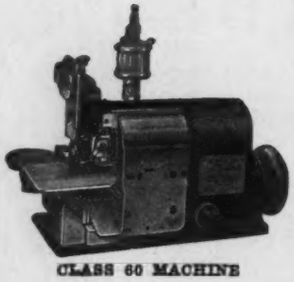

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cents a dozen, probably with an idea of giving a stimulus to interest in light weights. The market was in need of a tonic, and continued in a state of lassitude pending the expected arrival of buyers for the heavy weight opening, a formality that may be expected to develop favorably.

The position of nainsooks is said to have been weakened by the fact there are so many small manufacturing establishments in which a cutter and a few sewing machines are permitted to pass as a mill. Profits on other than well established branded lines are regarded very thin, considering the low prices named by some concerns, and demand is light, according to reports in the trade. Nainsooks obviously are feeling the effect of the looming popularity for cut and sewn shorts and knitted athletic shirts.

Sweaters Somewhat Inactive; Jobbers in Waiting Mood

SOME few of the manufacturers of standard types of sweaters have booked a substantial amount of business for early Fall deliveries. The term standard in this connection applies to low end coats to retail for around $2.50 to $3, and lines of definite character for $5 to $7. Taking mills as a whole, the business is backward. Prices, showing practically no change from the previous year, are lower than might have been expected, with worsted and cotton yarns higher. Yarns, however, were not much a factor in naming prices, for the drift is to singles and lighter weight fabric, the manufacturer getting more yardage and paying for less poundage. The trend is to better fabric of less weight. This is indicated particularly in women's sporty slip-ons for Spring. These, in view of some indecision as to style, probably will be bought late—some time after mills have Fall orders in process.

Manufacturers who have had buyer approval of their lines express much enthusiasm over the prospect for a busy year. They fared right well in 1928, when sweaters staged a genuine comeback as a forerunner of bigger business in 1929. Shakers remain as a standby for many mills, and sports coats are promising of another big season. Novelty effect will prevail, is the prediction of factors. Boys' sweaters are expected to show a considerable gain, at the expense of lumberjack coats.

Trading in bathing suits showed some improvement in December, but did not measure up to expectations. A few mills report production sold up for three to four months. Staple ribbed suits have had a better start than a year ago, while the very extreme in novelties is said to be lagging. Viewed as a single unit, the knitted outerwear trades present no discouraging aspect, leaning rather to expansion of sales.

Torrington Full-Fashioned Needle Output to Be Doubled

A few months ago it was announced that the demand for Torrington full-fashioned needles necessitated a day and night manufacturing schedule. The demand has increased to the extent that the machine-manufacturing department of the Torrington Co. is giving precedence to the production of sufficient machines to double the output of the full-fashioned needles.

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DIXIE MERCERIZING CO. DIXIE STRENGTH QUALITY LUSTRE CHATTANOOGA, TENN.

Natural, Dyed, Gassed, and Bleached

The Dixie Mercerizing Company's Trade Mark has come to represent the best in mercerized yarns to knitters and weavers everywhere — the result of consistent, year after year, production of strong, uniform, lustrous yarns.

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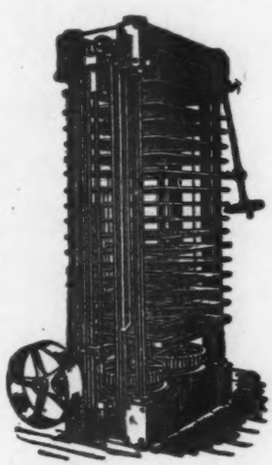
SPINNERS AND PROCESSORS
CHATTANOOGA TENNESSEE



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Hot Plate Screw Press
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GOLD CIRCLE NEEDLES
NO MORE ROUGH RIVETS
Our new needle with the rivet Brazed to the cheek does away with them. The needle lasts 3 times as long.
More and Better Knitting
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If you have not seen these improved needles or tried them, ask for samples.
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NEUTRASOL V-75 and ADOL

For soaking raw silk, especially hosiery tram.

NEUTRASOL S

For soaking raw silk or rayon. All purposes. Self-emulsifying.

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For oiling rayon for knitting or weaving.

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A dyeing oil, for levelling and softening.

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NEUTRASOL PRODUCTS CORPORATION

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The Yarn Market

Philadelphia, Pa., Dec. 13. 1928.

DURING the month preceding this writing, the Philadelphia yarn market outlook has been both dull and bright. The month opened with shading of cotton yarn prices undermining the market and the local prices became somewhat confused due to this. Some of the dealers and spinners, after seeing considerable business go by them due to other dealers and spinners shading prices, reduced their rates to meet the competition. The next week found the spinners raising their asking prices on their yarns about two cents per pound. The prevailing price for ordinary 20s/2 carded warps, for example, being 37½ to 38 cents per pound. Low-priced offerings have not entirely ceased, dealers admit, but they are less numerous than before and prices are not so much below general market levels as they were a week ago. Direct selling by the yarn mills is more general than has ever been the case previously. The latter part of the month found the demand for carded yarns and combed yarns beginning to slacken, and the local market interests who have been handling a very satisfactory business, from the standpoint of volume, agree that the fall buying movement has already passed its crest.

The first week of the month preceding this date found the local prices of carded yarns somewhat confused; the previous uniformity among the sellers was lacking. Buyers gave the market very little real support at any price. A few of the yarn houses had taken a satisfactory aggregate of business, but much of it at very unsatisfactory prices. Stock yarns, it was conceded, had increased in some directions, but the point was urged that stocks, on the whole, were not large. Stock yarns were offered at as low as 35 cents a pound for 20s/2 ordinary carded warps. On the other hand, few sellers were willing to quote them below 35½ cents and it was generally understood that the average spinner's minimum for this count in white yarn was 36 cents.

The second week found the spinners stiffening their asking prices again, the prevailing level for ordinary 20s/2 carded warps, for example, being 37½ to 38 cents per pound. Dealers were quoting 37 to 37½ cents a pound for this count and buyers were taking in small amounts at 36½ cents. The adjustment of yarn values had been gradual and spinners were expecting still further advances in the yarn markets before prices gain a level they consider in line with cotton prices. In the better grade yarns, prices had already reached 45 to 46 cents for the better grades of carded warps of 30s/2 for the plush mills. This was not alone due to the recent advance in the price of cotton, or to arbitrary pricing of these yarns by the spinners of these yarns. The plush mills supplying their needs through this market are nearly all busier than they have been in some months.

The third week of the month found a good many of the buyers covering their needs through February and March, and the spinners were displaying more independence in regard to prices. This condition forced the majority of the buyers to raise their bids. In the mind of all experienced sellers, on the other hand, there was apprehension lest yarn rates be advanced so rapidly as to set up resistance among yarn consumers. Direct selling became more general and is one of the many changes that have taken place in the merchandising of cotton yarns. Many of the knitwear manufacturers are now specifying the mills when they place their yarn orders and the same thing applies in only slightly less degree to the weavers.

The last week of the month found the price of carded knitted yarns, single combed yarns and two-ply mercerized yarns advanced. The advance named by the mercerizing interests was made in response to the previous upturn in rates asked for the gray yarn and ranged from one to two cents a pound, but did not include the finer numbers, above 80s/2. The situation in combed yarns, as a general thing, has shown substantial improvement. In carded yarns, spinners have booked a satisfactory volume of business, but much of this business showed little profit.

Philadelphia prices on December 13th follow:

Single Skeins.

4s to 8s	33	10s	33
12s	34	14s	34½
16s	35½	20s	36½
24s	38½	26s	39½
30s	40½		

Two-Ply Skeins.

8s	33	10s	33½
12s	34	14s	35
16s	36	20s	37@37½
24s	39½	26s	40½
30s	42	40s	47@48

Single Warps.

10s	34½	12s	35
14s	35½	16s	36
20s	37	26s	40½
30s	41½@42	40s	47

Southern Two-Ply Warps.

10s	34½	12s	35
14s	35½	16s	36½@37
20s	37@38	24s	39@40
26s	40@41	30s	42@43
40s	48@49		

Frame Spun Carded Yarn on Cones.

8s	31½@32	10s	32@32½
12s	32½@33	14s	33@33½
16s	33½@34	18s	34@34½
20s	35@35½	22s	36@36½
24s	37@37½	26s	38@38½
30s	40@40½	40s	46
30s dbl.cared	41@42	30s tying in	38@39

Two-Ply Combed Peeler Skeins and Warps.

8s to 16s	44	20s	45@48
24s	46@49	30s	48@51
40s	54@55	50s	57@59
60s	62@65	70s	72@77½
80s	82@87½		

Single Combed Peeler Yarn on Cones.

18s	43	24s	47
30s	48	36s	51@53
38s	52@54	40s	53@55
50s	57@58	60s	63@65
70s	73@75	80s	83@85

Mule Spun Carded Yarn on Cones.

10s	37	12s	37½
14s	38	16s	38½
18s	39	20s	39½
24s	41@42	26s	42@43
30s	43@44	40s	51@52

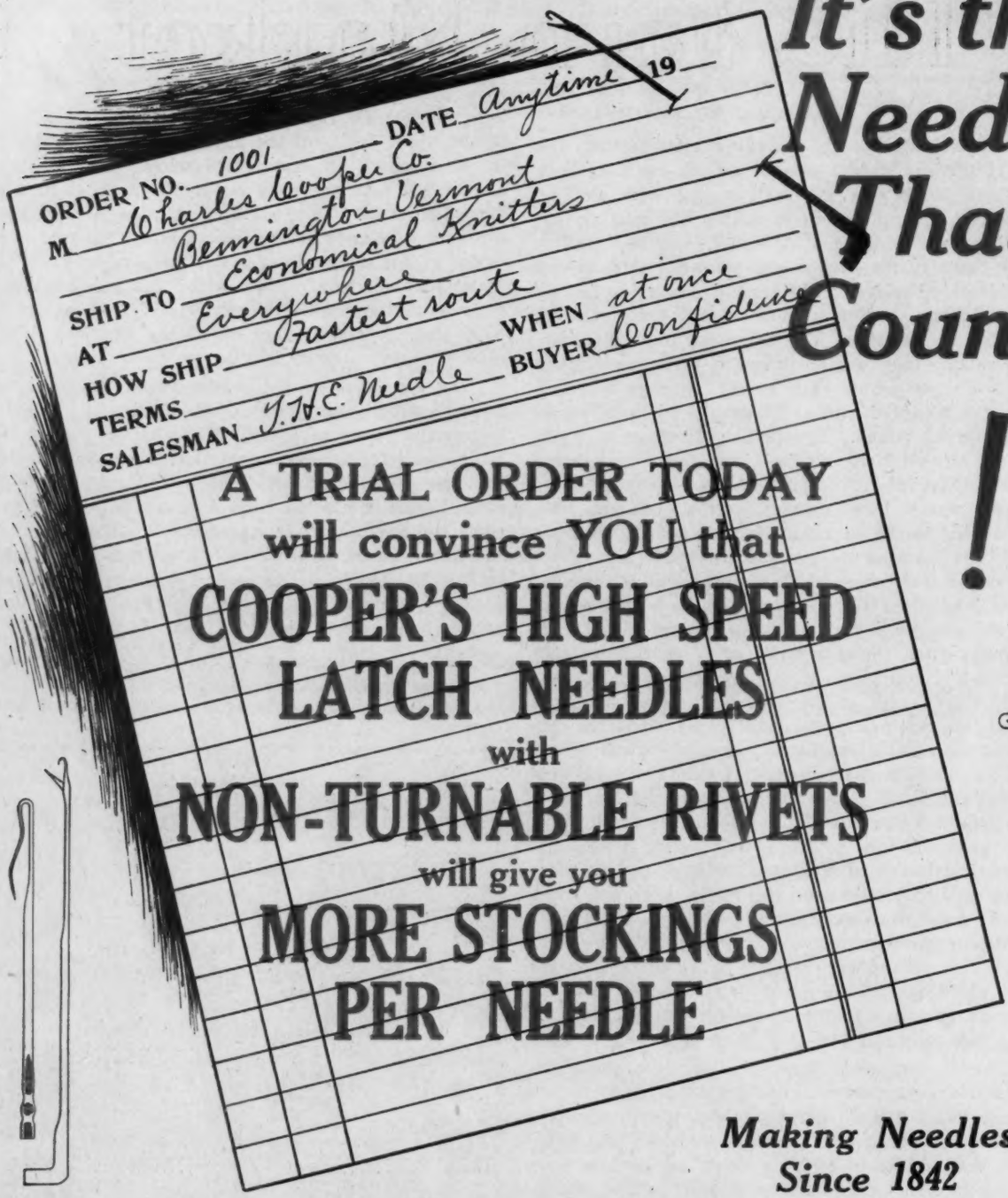
Mule Spun Combed Peeler Yarn on Cones

10s	43@44	12s	44@45
14s	45@46	16s	46@47
18s	47@48	20s	49@50
22s	50@51	26s	51@52
28s	52@53	30s	53@55
36s	56@58	38s	58@60
40s	59@62		

Carpet and Upholstery Yarn in Skeins.

8s and 9s 3-4 hard white warp twist	31@32
8s and 9s tinged tubes	30@31
8s 3-4 hard twist waste	30

It's the Needle That Counts !



Making Needles Since 1842

Charles Cooper Company Machine & Needle Works

G. H. ROGERS, Traveling Representative, 877 Warren St., Albany, N. Y.
C. C. KELLEY, Sales Manager, 121 East 24th St., New York City.
G. W. MORTON, Southern Representative, 1002 Magnolia St., Greensboro, N. C.

BENNINGTON, VERMONT, U.S.A.

Agents: MELLOR, BROMLEY & CO., Ltd., LEICESTER, ENGLAND.
ELBROOK, INC., 50 Peking Road, Shanghai, China, Agents for China and Japan.
M. BUCHSBAUM, Calle Alsina 1814, Buenos Aires, Argentina.

Many Definite Trends Affect Knitting Industry.

(*Continued from page* 333.)

other straw pointing the direction of the current in the full-fashioned hosiery industry expansion.

"Tell us how much production you want to provide for," says the company's industrial engineering department, "and we will design a plant for operation along modern economic lines, from the room for humidifying silk to the boarding department." Where cost of site permits, the company probably would recommend a one-story saw tooth roof building, and in a width of 105 feet would provide for but two supporting columns with twenty-six feet center to center clearance for the length of the building.

The Ballinger Company, also a Philadelphia organization of architects and engineers, favors, where at all feasible, the single story building with super-span construction of saw tooth roof, eliminating columns.

Trends in Distribution.

While architects and engineers have reduced to a science the matter of economic production, distribution is left to work out its problem in relation to economy. Distribution begins where production never ends. It starts with wholesaler or jobber and employs commission houses, mill agents and retailers, and involves many complexities, a part of the burden of which falls on the consumer, who in the final analysis is the determining factor in the shaping of distribution methods. A somewhat recent survey by means of questionnaires to which there was a 25 per cent response, representing approximately 3,750 replies, indicated that in New England more than 75 per cent buy their underwear and 70 per cent buy their hosiery in the local stores, with less than five per cent patronizing the door-to-door hosiery canvasser.

Canvassers have pretty well disappeared with a multiplication of retail stores and, as a sequence of sharper competition, lower prices, so low that they hardly can be matched by the canvasser. Thus has a factor whose operations bordered on the sensational only a few years ago been to a very great extent eliminated. The problem of the wholesale distributor centers about the proposal that the shortest route may not be the more economic, while it adjusts itself to the matter of quick turnover and frequent style changes.

W. K. Munger, president of the Burnham-Munger-Root Dry Goods Company, is quoted as saying "controlled distribution would solve problems of retailers." As a corollary of this proposal there arises the question how can distribution be controlled? It is significant of the interest manifest in the problem that committees of the Chamber of Commerce of the United States have had several meetings at which the question was threshed over, and will have more. As is pointed out in a preliminary report, "while there has been constant hammering on production cost there has been neglect of selling cost, that while making the production of an article cost a penny less it is costing a nickel more to sell it in meeting competition and inducing consumers to buy it."

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MERCERIZED
YARNS
Spindale
N.C.

Single Yarns
MERCERIZED
Licensed Manufacturer
TINTED YARNS
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and Glazed Sewing Threads.
THE ELMORE COMPANY
SPINDALE, N. C.
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Chattanooga: 805 James Bldg. Charlotte: Johnston Bldg.
READING, PA. CHICAGO, ILL.
Burke County Trust Bldg. 188 W. Jackson Blvd.
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For all Mechanical Purposes
Slashers and Roller Cloth for Cotton Mills.
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FULL FASHION HOSIERY MILLS
Felt sets for TEMCO Electric Heaters
Complete stock for immediate delivery
Samples and Prices Upon Request
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S.L.DIGGLE MANAGER
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SINGLE or PLY
Natural---Gassed---Dyed---Bleached
MERCERIZED YARNS
All Counts and Descriptions for the Knitting, Weaving and Converting Trade
DIXIE
MERCERIZED YARNS

Schemes have been and are being developed for eliminating the wholesaler as one factor not absolutely essential in distribution. Judging from the number of wholesalers who have passed out as distributors of finery in hosiery and underwear, it seems not improbable that as new schemes are developed or tried the tendency will be to reach the retail trade through the fewest intermediaries, and that in the gradual working plans toward that end specialty jobbers, concentrating on a minimum of collateral kindred lines, will strengthen their position, while jobbers of general lines will handle less hosiery, and that an increasing number of manufacturers will sell their product to the retail trade directly through their own organizations. It will remain for such elements to solve the problem of economic distribution, and solutions will be reached and revised in the never-ending competition which, while destructive to some factors and making for healthier conditions for others, is assumed to work out for the greatest good to the greater numbers.

Various Tendencies.

Chain stores often are a merger of retailers; more often is a retailer left stranded by the operations of the large chains in which expansion and not merger represents the growth. Powerful chain organizations constitute a desirable outlet for the products of large mills and become more attractive in this respect as with the spread of mass production. Reasoning from this premise, distribution direct to retailers promises to be attained to larger proportions, and with the number of strong chains increasing a decrease in the number of agencies in marketing seems inevitable.

Mill agents in the primary market centers for several years have felt the effect of changes in the distributing of full-fashioned hosiery specifically and hosiery and underwear generally. Competing manufacturers have said the commissions of mill agents represent an item which it seems imperative to eliminate from their selling cost. Commissions have not been increased, while the cost of travel and rentals and salaries of office attaches have mounted materially, forcing some agents to part company with the one-time profitable business of selling for manufacturers, and leaving others to follow the inexorable dictates of changes in methods of marketing, that of the present giving an advantage to concerns with large bank rolls with which to carry immediately deliverable stocks.

The drift is fairly indicated in the recent merging of six underwear mills in the newly incorporated Campe Corporation of Delaware, by which distribution is said to be simplified while not materially affecting operation by the several units. There have been a few mergers of wholesalers, but a complete disappearance of a greater number. Combinations of full-fashioned hosiery manufacturers have been attempted, but if any has been carried through, the transactions have not been recorded. An increasing number of manufacturers selling to wholesalers have dispensed with selling agents, and executives are operating their offices besides functioning as road salesmen. Such changes were made within the last two months by three knitted outerwear manufacturers in Philadelphia, and three mills which are distributing under their nationally advertised brands, about the same time formed the M. S. Ely Knitwear Corporation, to handle only national trademarked lines.

It seems as a safe assumption the changes mentioned supply an index of what is in the minds of producers and distributors as to their immediate future. Another that might be chronicled as indicating the trend to concentration was the recent extension of the territory of selected jobbers distributing a nationally known brand of knitted underwear for men, and the elimination of perhaps a half dozen jobbers in Pennsylvania alone. With fewer distributors, manufacturers require fewer salesmen, and with more of direct selling, the field of the mill agent narrows.

Mueller Leaves Textile Machine Works

WILLIAM F. MUELLER, for many years salesman for the Textile Machine Works, builders of Reading full fashioned machines, who submitted his resignation effective January 1st, may engage in the manufacture of hosiery, locating, possibly, in a southern city. He has had the proffer of several attractive connections, and at last accounts was undecided as to his future. Mr. Mueller is known among practically all full-fashioned manufacturers in the American field. It is stated unofficially that the Textile Machine Works now will distribute its sales among four representatives—one for Philadelphia and the East, one for Pennsylvania outside of Philadelphia, and one each in the South and the West.

J. Ogden Wells

J. Ogden Wells, President of Cooper, Wells & Co., St. Joseph, Mich., and First Vice-President of the National Association of Hosiery & Underwear Manufacturers, died suddenly Sunday night, December 16th, at his home in St. Joseph. His death resulted from an attack of heart failure.

With Mr. Wells' passing the industry loses one of its most successful and popular manufacturers, and a man who has shown consistently keen interest in the betterment of the business through his active work for the Association.

He was a graduate of Harvard University, and his career was a colorful one, including participation in the Spanish American war as a member of Roosevelt's Rough Riders.

Mr. Wells had not been in good health for several months, and had spent some time at a sanitarium in Michigan. He had recently given every indication of an early return to the vigorous health to which he was accustomed, however, and his death comes as an unexpected shock to many friends in all parts of the country.